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DISCUSSIONS ON TORQUAY CONGRESS PAPERS.

No. 6—Intestinal Parasitism in the Horse and its Treatment.*

The President (Professor G. H. Wooldridge) occupied the chair at the first session on Thursday, September 15th. Before calling upon Professor Leiper to open the discussion, the chairman asked the essayist if he had any preliminary observations to offer.

Captain A. W. Noel Pillers: There are several important mistakes in my paper, which have crept in since I read the proof sheets. The most important of these is on page 143 of the Handbook, where the dose of carbon tetrachloride is given as 1 c.c. per kilogram, instead of .1 c.c. per kilogram.

Professor R. T. Leiper, M.D., D.Sc., F.R.S. (Professor of Helminthology, London School of Hygiene and Tropical Medicine):

Before entering upon the subject matter of this morning's paper, may I say how highly I appreciate the honour which your Council has paid to me—an honorary member of your Association—by inviting me to take so prominent a part in your proceedings, particularly in the year of Professor Wooldridge's presidency, because he was one of the first to hold out to me a helping hand when, several years ago, I took up in London the narrow profession of Comparative Parasitology.

Captain Noel Pillers has long been known to me as one who combined with an extensive and in many respects unique clinical experience, an interest and enthusiasm for parasitological investigation. He has prepared a remarkably succinct account of a very wide and complex subject.

In inviting one without clinical experience to continue its consideration your Council doubtless expected me to present the somewhat detached point of view of one primarily interested in the parasite rather than in the reactions of the host.

The horse is parasitised by a large number of different species and these almost all belong to specialised genera which do not occur in other domesticated animals. The almost invariable occurrence of multiple infections and the fact that the consequences of the presence of any one species depends roughly on the numbers present renders, I should judge, the clinical picture very obscure and varied, owing to the innumerable permutations and combinations possible.

There is here a fine field for clinical differentiation, for it is very probable that the different genera give rise to different reactions on the part of the host. Unfortunately, however, the clinician, finding a somewhat facile diagnosis in the passage of helminth eggs in the fæces, is often content to make, from the mere presence of such eggs, a diagnosis of intestinal parasitism. I venture to urge the veterinary surgeon not to abandon the field of clinical research for that of helminthological routine.

Although we can determine the presence of adult parasites in the intestine by finding eggs in the fæces, we have no standard, at the present time, by which to determine either the species or the numbers present. Moreover, the eggs inform us of the occurrence only of adult females. There is no means of assessing the number of males nor of determining the presence of larval stages which, in some cases, are probably responsible for severe clinical manifestations.

As Captain Noel Pillers has pointed out, I have myself deprecated the routine use of concentrated methods, for they tend to give a false impression of the intensity of infection. If, however, a concentrative method is used, attention should be drawn to the criticism of the Sheather method, mentioned by Captain Noel Pillers, recently made by Colonel Clayton Lane, who has, perhaps, devoted more thought to concentrative methods than any other person. Colonel Clayton Lane points out that the substitution by Sheather of sugar for salt reduces to 10 per cent. the efficiency of the method.

There is another feature of intestinal parasitism in the horse which at once strikes the parasitologist. Whereas in the other domesticated animals the bulk of the important parasites live in the small intestines, in the horse the small intestine appears to be peculiarly inhospitable; while trematodes, cestodes and nematodes flourish in the large intestine. If those interested in equine physiology were able to point out the significance of this contrast they might provide information which might prove of value to the parasitologist.

At first sight the prevention of helminth infection should prove relatively easy, for the parasites do not multiply within the body and the eggs or young have to remain for a considerable period outside the body before they become infective. We know, too, that none of the intestinal parasites of the horse enter through the skin.

Many years ago, struck by the fact that the parasites of the horse differed from those of other domesticated animals, I invented a catch phrase "rotation of croppers." To-day the essayist has given particularity to that generalisation. I should be interested to learn on what specific researches he has been led to give the formula of five cattle to one horse as a scientific means of ridding pastures of infection. Although the parasites of the horse cannot become parasites of other farm stock, we must not, without proof, jump to the conclusion that the eggs and larval stages are necessarily destroyed when they are eaten from infected pastures by cattle or sheep, and that they do not pass through the bowel to be more widely distributed on the pastures.

Contrary to generally-expressed opinion, standing waters do not seem to me to be a great source of danger.

*Paper by Captain A. W. Noel Pillers (Liverpool.)

Moisture as a vector film for absorbing oxygen is important, but water of any depth is inhibitory to larval development.

Another peculiarity of the intestinal parasites of the horse, which renders preventive measures more difficult and a cleansing of pastures merely by " rotation of croppers " possibly ineffectual, is their peculiar capacity as larvæ to withstand complete desiccation for many weeks.

Hay, therefore, is theoretically an important source of infection and the occurrence of intense intestinal parasitism in the old London cab horses, which for years had not been outside the City of London, supports the view that hay may convey infection. Old litter and old bedding is far more likely to be a source of danger than fresh manure.

The parasitologist sees at the present time no clear prospect of success in prevention by the application of biological or chemical controls in the field.

The most vulnerable and accessible part of the life-history upon which to wage war is the egg-laying female. By repeated periodical dosing the infection could be eradicated from the animals and ultimately from the pastures. This method, however, does not avert the clinical risks arising from the presence of larval stages in the horse.

The essayist as a clinician says, " Worm expulsion is only the first stage of treatment. Prevention of further infection is essentially a part of treatment." As a parasitologist I would reply, " Treatment is the essential part of prevention. Worm expulsion is not only the first stage, but the whole practice of prevention."

Recently, the Council of the Royal Society of Medicine decided in formal session that the most important medical problem that could be discussed at a meeting of the whole Society during the coming winter was " Can we cleanse the colon ? " It would appear that the same question confronts the veterinary surgeon. (Applause).

Mr. R. H. Smythe (Camborne) : It is quite evident, from a perusal of his remarks, that Mr. Pillers realised the difficulty of condensing a paper which might easily have run into two volumes, into the space of 3,000 words. His effort is as successful as could be expected, but of necessity a technical paper of this nature, so forcibly abbreviated, must consist mainly of a glossary and a bibliography. The references at its conclusion cover a lot of the ground, and introduce us to various observers, but, knowing Mr. Pillers as one of our keenest parasitologists, we should have preferred a few more of his personal observations and a more detailed reference to those parasites which possess clinical importance.

The treatments outlined by Mr. Pillers are mainly a repetition of the findings of Hall and his colleagues and although they represent the result of researches carried out with mathematical precision, practitioners who have given them a trial are by no means satisfied that they represent the last word in efficiency. Mr. Pillers will have the opportunity at the close of the discussion to tell us many things which the brevity of his paper precluded and I hope that he will have more to say on this matter of the *treatment* of intestinal parasites. Whilst enormous studies have been made by helminthologists during the last few years in the classification of worms, there still remains a lot to be ascertained regarding their eradication and, what is even more important, their prevention.

Mr. Pillers, in speaking of the injurious effects of parasites, ascribes a clinical importance to bots, oxyurids and ascarids and remarks that the effects of the two latter are constant clinical observations. I think that " constant " is the wrong word in this case and the word " rare" should be substituted. That a heavy infestation with either parasite may cause clinical symptoms is admitted, but illness, undeniably due for instance, to ascarides, is so rare as to be worthy of record.

The *diagnosis* of intestinal parasites has been greatly facilitated by the egg flotation method, described by Sheather, and has the advantage that it gives some indication of the number of individuals present and this cannot be determined by the discovery of one or two parasites on rectal examination.

" Red Worms," if I may use the term, may exist in the bowel in enormous numbers, without any being found in the fæces, except on certain occasions, when it may or may not fall to the lot of the practitioner to be present. On the other hand, the sudden elimination of several hundred adults and larvæ may not indicate a dangerous infestation. It must also be remembered that any gastro-intestinal derangement, particularly if accompanied by diarrhœa, due possibly to errors of diet, will result in the evacuation of worms if present in the bowels and in this case it would be wrong to imagine that worms were producing the symptoms. The free use of irritant anthelmintics would in this instance be injurious. Worms are normal inhabitants of all animals and, whilst it is doubtful whether immunity is ever acquired, there is no doubt that a degree of tolerance exists from birth and that this degree varies according to the individual. The diagnosis " red worms " is liable to become a fetish, akin to the diagnosis of " round worms " in the dog. A large percentage of country horses harbour red worms without harm and one must always consider whether in a case of illness the evacuation of parasites represents cause or effect.

Mr. Pillers refers to an immunity which, he states, develops with age and which he describes as being well-known to most of us. This is not borne out by examination of the carcases of old horses and ponies slaughtered at knackers' yards on the ground of debility and emaciation. In a great majority of these, strongyles and trichonema are present in large numbers and it is probable that in old animals tolerance becomes less as dental efficiency diminishes. Mr. Pillers may be correct in attributing tolerance to severe infestations, to immunity to toxins, but it is equally probable that it is due to the possession of a sound digestion with the power of rapidly making up losses. Possibly, immunity is acquired against the invasion of the body by secondary organisms, which gain access through the bowel ulcers. The reference to the Welsh Hills, where native ponies remained healthy although affected with red worms, whilst those bred from a thoroughbred sire showed symptoms, is only what one would have expected. The fine skins and coats of the latter are acquired characters, due to artificial living conditions, selective breeding and the admixture of Arab blood. The native ponies would naturally be more fitted to withstand life on the Welsh hills than would the half-bred ponies, which would have enough to do to maintain themselves, apart from a host of strongyles.

Passing on to the question of "bots," in the South-west of England, and I presume in most counties, the majority of horses which pass part of the summer at grass harbour bots. Those occurring in the intestine are of no great consequence. Destruction of eggs on the coat would not commend itself to rural dwellers, it would need to be a daily or hourly proceeding and unless carefully followed up would be futile. A reliable fly repellant might be of service, but it would be difficult to secure its adoption. Will Mr. Pillers explain how the larvæ of *Gastrophilus veterinus*, which lays its eggs on the hairs of the submaxillary space, reach the stomach ?

What treatment does Mr. Pillers suggest for tapeworms in the horse ? Segments are not infrequently met with on rectal examination, but other worms are usually present, in addition, if there is debility.

Concerning ascarids, in spite of their prevalence one rarely meets with symptoms directly attributable to their presence; in fact, the practitioner usually regards *Parascaris equorum* as one of his benign friends, striking terror into the heart of the owner on account of its size, but not into his own. In foals, impaction has been reported and I have seen one case of fatal impaction of the single colon in an aged horse.

Mr. Pillers has rightly devoted the most space to strongylidosis and there is no doubt that this condition is the most serious worm infestation occurring in horses in this country. The serious symptoms and fatalities exceed those of all other worm parasites collectively. It is noteworthy that whilst one horse in a stable may show advanced emaciation, diarrhœa and possibly œdema, the other horses may remain perfectly healthy in appearance and yet, on rectal examination, one may find in them an infestation equal to that of the sick animal. Strongyles are frequently found, in large numbers, in horses post-mortemed for some other complaint. Red worm infection is widespread in rural districts and probably one horse in three, at least, carries these parasites without appearing any the worse for their presence. Such animals act as carriers, infect pastures and need a prolonged treatment, indoors, to render them safe. Young horses are the greatest sufferers but, as was remarked previously, old horses frequently die of debility accelerated or produced by the presence of strongyles.

The amount of damage done to the mucous membranes by trichonema is often extreme and sufficient to cause death or chronic debility without the aid of toxins. Can Mr. Pillers state whether bacterial invasion of the blood, in such cases, has ever been demonstrated ? In the young rabbit, for instance, affected with coccidia, death frequently results from septicæmia and, since the damage to the bowel lining is similar, it is possible that a like invasion may occur. Fever is not uncommon in acute cases in colts and these are usually fatal.

Will Mr. Pillers explain the difference in colour encountered in trichonema and triodontophorus ? In the same subject one often finds grey, bright red, and greenish worms. Is the red coloration due to pigment or does it represent an after-dinner effect ? Whilst it is comparatively easy to demonstrate live worms in fæces removed by hand, it is almost impossible to detect any if the fæces have lain on the ground half an hour or longer. Will Mr. Pillers explain their rapid disappearance ? Is œdema the result of the presence of any particular species ? I find, in practice, that horses on certain farms exhibit this symptom whilst it does not occur on others, though the infection appears a mixed one. We have also observed typical symptoms of strongylidosis and marked œdema of the head, limbs and prepuce in horses on a farm which had been dressed with sewage, without being able to demonstrate the presence of parasites in the fæces. These horses all recovered after six months. I hope Mr. Pillers will tell us more about the intermittent cases of colic and paralysis one meets with in practice, due to strongyles becoming impacted in the mesenteric vessels and aorta.

Prevention.—Land once infected with strongyles remains dangerous until it is ploughed. Hay from infected land may carry trichonema and I have met with several outbreaks directly traceable to hay from one particular farm. Although the plough is our most formidable weapon, it is not always available and in this case sheep help by cropping the grass very short. Can Mr. Pillers tell us if the larvæ of red worms die in another host or whether they pass through unharmed ?

Drainage is very important, combined with the closing of all drinking pools, but drainage of low lying land is often difficult. As far as possible, horses should be confined to fairly new pastures. Top dressings are useless in my own experience, as in Mr. Pillers'; the two worst farms in my district are situated in two valleys. One opens on to the Atlantic and is impregnated with sea salt and lime in the form of fine sand, the other is in a mining district and the grass is highly arsenical.

Nothing useful can be done to pastures whilst their inmates harbour parasites. On the whole, to one versed in the psychology of the farmer, prevention would appear impossible. Dung from stables should be stocked in large piles, in the hope that the heat generated in the interior, aided by lack of air and the presence of decomposition products, may destroy the parasitic life. The exterior of the pile may be sterilised by covering with dry bedding and igniting. The larvæ of *Triodontophorus tenuicollis* can, however, withstand a temperature of 60°C, and are thus difficult to destroy. They can exist in most haystacks.

Treatment.—To remove worms successfully one must be a pessimist. The optimist ceases his attack when he commences to be successful.

Regarding bots, any therapeutic measures involving a thirty-six hours' fast are undesirable and I think they are best left *in situ*.

Oxyuris responds to a full dose of aloes with one or two ounces of ol. tereb. after a twenty-four hours' fast. This is usually the longest period the feelings of the owner will permit. Daily doses of ferri sulph. and powdered quassia, with or without santonin are equally sure, but slow. Powdered quassia is readily taken in the food and possesses valuable anthelmintic properties. It is non-toxic and is of use in strongylidosis and ascariasis also. I do not think that Mr. Pillers' suggestion of carbon tetrachloride, five to twelve drachms, followed by oil, is worth the risk, considering the small importance of oxyuris and the recent investigations into the toxicity of pure carbon tetrachloride in other herbivora. Oil of chenopodium in linseed oil, after fasting, is very effective, but

probably has little advantage over turpentine and is not free from risk. Ascarides offer a greater resistance to anthelmintics. Carbon bisulphide, although the most effective remedy, is not safe outside the hands of the practitioner and has not so far found much favour in this country. It does not go beyond the small intestine. Ascarides do not live in arsenical districts. Antimony tartrate given in small repeated doses or santonin and calomel given daily for a week and followed by an aloes ball usually effect their removal as rapidly as carbon bisulphide does. There is seldom any hurry in these cases and " Safety first," should be the motto.

Passing on to the treatment of strongylidosis, Hall's researches prove the value of oil of chenopodium in removing worms which are within the bowel. But chenopodium has no effect upon larvæ encysted in the bowel wall or in any other part of the body, including the blood vessels, and it does not prevent fresh crops of larvæ gaining access to the bowel. Neither has it a salutary effect on the ulcerated bowel, as it is a gastro-intestinal irritant and is dangerous in all forms of gastro-enteritis, in diarrhœa and in debilitated subjects. Personally, I never exceed two drachms and, on the whole, I find turpentine in milk equally efficacious. Rainey, in 1926, recorded death in a cart horse following administration of half an ounce of oil of chenopodium. Santonin is not so irritant and, combined with calomel, has a useful action in repeated small doses. Thymol is good, but it is unpleasant to administer. I might add that linseed oil is dangerous in debilitated subjects and I have seen the trachea and bronchi full of oil on *post-mortem*. Harvey has reported similar happenings. Treatment *must* be carried out for months if complete elimination is to be hoped for, although apparent recovery often occurs with no apparent lessening of the number of worms present, if an examination be made six months after recovery of condition. When debility is commencing and no œdema or diarrhœa is evident, quite good results are obtained by the daily administration of ferri sulph. and powdered quassia. I think that iron in some form is an essential part of treatment. In œdema, syrup ferri iodid or liq. ferri perchlor, given daily with turpentine in gruel, gives good results. Milk is an excellent food for affected colts, so is linseed cake if they will take it. Arsenic is useless in strongylidosis. As previously mentioned, the arsenic country of Cornwall is infested with trichonema—to such an extent that some insurance companies, whilst accepting all mining risks, bar death from red worms. Will Mr. Pillers give us any information regarding the intravenous or intramuscular injection of atoxyl? Can he also recommend treatment in the case of persistent diarrhœa? I have been very unsuccessful.

The mention of Allen's treatment will, I hope, induce some of the exponents of stomach lavage to enter the discussion; personally, I consider it more heroic than discreet. Mr. Pillers describes the stomach tube as a sure means of introducing safely, into the stomach, drugs which irritate the throat. In his next paragraph, he describes how an experienced practitioner passed a stomach tube and one ounce of carbon tetrachloride into the trachea.

I hope Mr. Pillers will discuss some of the points to which he refers, at the end of his essay, particularly the matter of soundness and warranty.

I must conclude by thanking Mr. Pillers for his paper, with a full realisation of the difficulties with which he has had to contend, and I apologise fully for the length of my remarks. (Applause).

Major C. DAVENPORT: In the first place I would like to thank Mr. Noel Pillers for his paper. While I sympathise with him in the restrictions under which he laboured in the preparation of this paper and while I deplore that so interesting and important a subject should have been limited in any way whatever, at the same time I do feel that he is to be greatly congratulated in having crammed so much of real interest and real value into the very limited space at his disposal. (Applause).

During the last two years the laboratory in which I work at Aldershot has devoted a certain amount of time to the subject before us this morning. Some of the points raised by the essayist are intimately related to the work we have been attempting to do and, if you will allow me, I would like to mention them now.

Firstly, equine coccidiosis. In some thirteen years' practice in different parts of the world I have never seen this condition. Since 1st January last at Aldershot we have examined 669 samples of equine fæces and not once has anything in any way resembling a coccidium been detected.

Secondly, laboratory diagnostic methods based on the recognition of parasitic ova. At Aldershot we make use of Sheather's Floatation Technique, now no doubt well known to many of you. We find it simple, efficacious and absolutely reliable. I reported some six months ago, however, that the recognition of parasitic ova by this method was entirely prevented if fæcal examinations were made during the period in which purgation, consequent upon a dose of oil, was taking place. The emulsified oil contained in the sample under examination is thrown to the surface during centrifuging and it entirely masks any ova subsequently obtained on the cover slip. There is a slight improvement in technique in this connection, which I would like to mention. If the sediment obtained as a result of the first centrifuging is shaken up with about 1 c.c. of chloroform before the sugar solution is added, an absolutely clear picture, free of all traces of oil, will subsequently be obtained under the microscope. This improvement in technique (for which I am indebted to my laboratory assistant, Mr. Crisp) has enabled us to carry on our fæcal examinations during the period of purgation in connection with a series of experiments which I will mention in a moment.

Thirdly, Mr. Noel Pillers draws attention to the absence of ova of oxyuridæ in samples of fæces examined according to Sheather's technique. He also provides the explanation of this. I bear out what he says. In the 669 examinations of fæcal matter I have mentioned, only once have we detected ova of oxyuridæ. It will be obvious to you all that the incidence of oxyuriasis in army horses is greatly in excess of 1: 669.

I would like to congratulate Mr. Noel Pillers on the very excellent diagrams included on the last page of his paper. No doubt this sheet will shortly adorn many a surgery wall

in different parts of the country. A working knowledge of the characteristics of these various parasitic ova is really all that is necessary when we set out to back up clinical diagnosis by a microscopic examination, as Mr. Noel Pillers so justly pleads we should do. A point of great interest arises here. I would draw your attention to the diagram in the bottom left hand corner, the one marked Strongylus species. I want to ask Mr. Noel Pillers if there is no possible method by which we can definitely differentiate the ova of the various genera of the family Strongylidæ ? In his paper he says " Eggs of this group are practically impossible of differentiation." Is this correct ? Is there no way by which, for example, ova of trichonema may be differentiated from those of the strongyles, or ova of triodontophorus from those of œsophagodontus ? I mention this because at Aldershot we have now made ourselves fairly conversant with the ordinary microscopic diagnostic work and we do find that cases are constantly cropping up in which it would be of great assistance to be able to say that a given sample of fæces shows that a horse is definitely affected with trichonema as well as strongyles or, conversely, that a given sample of fæces shows no evidence whatever of a red worm infection. Particularly is this the case in regard to young horses turned out to grass. You may say that every case of intestinal parasitism in horses is a mixed one as far as the strongylidæ are concerned. Nevertheless it seems to me that we have now reached a stage in our laboratory diagnosis of these conditions, when we ought to be able to state with greater accuracy exactly what worms are present within the bowel. In regard to this family, all we can say at present is that ova of Strongylidæ in general are present and this, I hold, is not good enough.

Mr. Noel Pillers mentions the involvement of the ileo-cæcal-colic arteries by larvæ of *Strongylus vulgaris* ; that is to say, those arteries which run along the surface of the cæcum and colon, in contra-distinction to the mesenteric arteries proper. Now, all the text books I have searched only mention the involvement of the anterior and posterior mesenteric arteries or their ramifications in the mesentery. I would like to ask Mr. Noel Pillers where he got this information from. No doubt it is the result of his own personal observation. I, personally, can bear out what he says and in my experience, in young horses at any rate, the ileo-cæcal-colic arteries are actually more frequently involved than the mesenteric. It appears to me that in the past the involvement of the ileo-cæcal-colic arteries has been overlooked and, if what Mr. Noel Pillers says is right (as I have every reason to believe is the case), then we have a far better explanation for the cases of so-called thrombo-embolic colic than that previously offered when involvement of the artery up at the aorta was held to constitute the sole reason for gangrene of a portion of the bowel below. These lesions of the ileo-cæcal-colic artery must, however, be searched for, and they constitute one of the most interesting pathological conditions I have ever seen. The degree of involvement of these arteries, in my experience, is often truly amazing and the wonder is that the bowel looks as healthy as it does.

Treatment.—I have employed carbon tetrachloride with great success against ascaridæ, but not very satisfactorily against trichonema and strongyles. Against ascaridæ I find it shows a 100 per cent. efficiency. My dose is 60 ccs. to a charger or troop horse, given per stomach tube, washed down with a little water. The horse is, of course, fasted beforehand as usual. No purgative is ever employed. I have not seen any toxic effects even in extremely emaciated animals.

Oil of chenopodium I now regard as indispensable for the elimination of worms belonging to the family strongylidæ. At Aldershot we employ a dose of 4 to 5 drms., administered either by capsule or per stomach tube. I have seen toxic effects in the dog, but not in the horse. A practitioner recently consulted me in regard to a yearling colt badly affected with trichonema. I recommended a dose of 2 drms. of this drug in a capsule followed by a pint of paraffin liquidum. The dose was repeated after an interval of a fortnight. The result was more than satisfactory. I am assured that the at time the first dose was administered the colt appeared to be dying. He was very poor in condition, hidebound and showed every evidence of unthriftiness. Two months later he was awaiting despatch to Tattersall's.

Finally, Mr. Noel Pillers, on the last page of his paper, enters a plea that we take a graver view of equine strongyloidosis in the future than in the past, and that we make more use of the microscope in diagnosis. I wish to bring before you a piece of work which we have been undertaking at Aldershot this year. As all those of you with army experience are well aware, every Unit of the army has a few horses whose condition is not all that it might be and which are at the same time no credit to the Unit itself, and to the Veterinary Officer and the Unit commander, a disappointment.

Now, the causes of unthriftiness in horses are many and may I make it clear to you at once that at Aldershot we do not ascribe every case of debility or poor condition that we meet with to the presence of entozoa. What we *are* saying however is :—" To what extent can this poor condition be attributable to the presence of intestinal parasites and to what extent can we employ our laboratory in the diagnosis of the condition ? "

The following is an outline of what we have been doing. The poor horses in the command have been marked down. Their droppings have been examined for the presence of parasitic ova and, where these have been found to be numerous, we have had the case transferred to Hospital. In Hospital these horses have been weighed and then fasted for sixty hours. At the end of this time the following alterative and anthelmintic draught has been administered per stomach tube :—

℞	Ol. chenopodii	4 to 5 drms.
	Formalin	1 drm.
	Ol. tereb.	1 to 2 ozs.
	Pulv. aloes	4 to 5 drms.
	Ol. lini	1 to 2 pints.
	Sodi chlor.	6 ozs.
	Water	2 to 3 gallons.

Purgation follows and may persist for two days, after which the normal appetite soon returns. When the horse shows a definite improvement in condition (which generally occurs in three to four weeks) the fæces are again examined and if they are negative to parasitic ova (as they invariably

are) then the horse is again weighed and discharged to duty.

So far we have dealt with 159 horses in this manner. The average number of days under treatment has been 29·94 and the average gain in weight during this period has been 38·61 lbs. We find that the improvement in condition is maintained and is rapid and permanent. Possibly some of you may ascribe these very satisfactory results more to the value of the rest, extra feeding and attention, and the alterative nature of the draught than to the elimination of the intestinal parasites. We are not prepared to agree to this. Rest, extra feeding and the administration of aloes has been tried many times in the past without the same success that we are now getting. We are still in the experimental stage only, but I would like to say this—the Units of the Aldershot Command are at present showing a lower proportion of poorly-conditioned animals than I ever remember before and that this very satisfactory state of affairs has followed a more general employment of anthelmintic treatment.

As regards increased use of the laboratory in diagnostic work, there appear to be two aspects to the case. Firstly, the diagnosis of the presence of "worm disease," and, secondly, an estimation of the extent to which any given animal is infected. At Aldershot we feel that our knowledge has sufficiently advanced for the laboratory to be of real use in the first of these cases, namely the diagnosis of the presence of worm disease. Indeed, quite recently we have twice established a definite diagnosis by laboratory methods in cases in which there was a doubt as to the nature of the condition from which certain remounts were suffering.

This is not sufficient, however. What we require, and what you require also, is increased assistance from the laboratory regarding the extent to which any given horse is infected by the various species of worm. Mr. Noel Pillers in his paper states that "there is no standard laboratory technique by means of which one can say whether one is dealing with a clinical condition or not." At Aldershot we are attempting to repair this deficiency in our knowledge, but I regret I am unable to report any real progress to date.

I must apologise for detaining you so long. (Applause).

Mr. W. Tweed (Sheffield): I must confess that I know very little about animal parasites, but I was particularly struck with the way in which Mr. Pillers condensed a subject like Parasitology and gave us a thoroughly workable classification—which hitherto has always appeared to me a study laden with old and new terms for larvæ and adult worms. The number of practical hints that he was able to get into his paper on diagnosis and treatment, in spite of the word limit that the "National" exercised over him, is very good indeed, and I think that the only thing to which I would like to take exception is the few drawings that he has given us. I should have liked to have seen microscopic views of fæcal material with worms and eggs interspersed. I am sure that, in his reply, Mr. Pillers will tell us what objects we have to guard against in recognising worm eggs.

Dr. Leiper mentioned the value of clinical symptoms in diagnosis and I should like to give the details of an outbreak which started in pit ponies that had been to pasture during the coal strike. One pony began with diarrhœa, emaciation and anæmia. The attendant veterinary surgeon, on *post-mortem*, found chronic enteritis of the large and small bowel. Another pony became affected later with the same symptoms and died, and a second veterinary surgeon was called in by the first in consultation; both came to the conclusion that the condition was an obscure disease and they forwarded material to be investigated by Dr. Hare. The next week two more ponies died, and Dr. Hare had in the meantime got Mr. Pillers to look at specimens of the bowel. Mr. Pillers diagnosed the trouble as a strongylosis infection, due to the Trichonema species of parasite. He prescribed the treatment and no further trouble occurred. Now the point I wish to make is this. If the veterinary surgeons had been able to diagnose the presence of the parasites causing the trouble, by making a microscopic examination of the fæces, they might have saved the loss of some of these ponies.

I know that Mr. Pillers is only too pleased to render any assistance he can to men who are willing to undertake the search for worms or worm eggs and I think that we, as a profession, owe a great deal to him for the amount of advice and help that he does give us in these cases and also for the benefit which has accrued to the profession from Mr. Pillers having made research in this field of veterinary work his life's hobby. (Applause).

Mr. R. F. Montgomerie (Bangor University): My excuse for speaking is that I have received a great deal of help and encouragement from Dr. Leiper, but it is one I hesitate to make for myself because I am afraid that the whole of us would have to rise and say that we must all speak because of the help and encouragement we had received from Mr. Noel Pillers. (Applause). I wish to speak on the question of the use of microscopic methods. I was a little disappointed, and certainly surprised, when Dr. Leiper suggested that we should use clinical methods in preference to microscopic. My reason is that my little experience seems to teach me that there has been a considerable loss, before our clinical diagnosis is possible in the individual animal, in the way of loss of condition. I do feel that you eliminate much of that loss by the use of microscopical examination.

I know that perhaps I should keep clear of the subject of carbon tetrachloride, but I wish to make one remark with regard to the use of that drug in the horse. I was delighted to hear the remark made and to find such results have been obtained, but I wish to point out that the horses with which the Major was dealing were Army horses, fed on reasonable and well-balanced rations; the general practitioner meets horses fed on some very curious rations and I think that has a bearing on carbon tetrachloride toxicity.

Major G. Rees-Mogg (London): As an old college pal of Noel Pillers I would like to thank him very much for his interesting paper and firstly to make a remark on the last three lines of it—"As a humble contributor to this year's proceedings, I hope some steps will be taken to restore this freedom." These lines refer to the number of words—3,000—allotted to the essayist. The books in which these papers appear are to be put away for reference in years to come. We do value these papers and it is ludicrous, in my opinion, to expect anybody to write a

paper and to limit him to 3,000 words, while the opener of the discussion is not limited to 30,000 words. (Hear, hear.)

As regards the drugs used in the treatment of parasitic infestations, oil of chenopodium is, we all agree, one of the most important, and I have been very lucky in its use; I have never had any bad results. I have given an ounce repeatedly without any ill effects. I combine oil of chenopodium with thymol and a little castor oil, for I think that thymol is a most excellent drug for these worms. I used to give only a drachm, but a doctor friend advised me to try an ounce. I give it, after forty-eight hours' fasting, in a quart of skimmed milk, and it brings the worms out by the thousand. On the advice of Mr. John Brown, of Invergordon, I tried atoxyl subcutaneously and I found that it had an extraordinarily beneficial effect on the health of the animal. I give larger doses of atoxyl by degrees. Unfortunately atoxyl is very expensive. As regards the length of the treatment, one has to go on for two or three weeks or a month. I have had cases which I thought were cured after repeated doses of the above for two or three weeks and the eggs have still been found in the fæces.

Dr. Leiper frightened me very much by saying that he thought the larvæ could live in the bodies of sheep and cattle and then infect the land. If that is so, it is an awful prospect, because we all hoped that if you kept horses off the land for a year and put sheep and cattle on it you would get rid of the disease. But he says something even worse—namely: that hay cropped from such land can infect the animals. He says he has known cab horses in London suffer from the disease, but as cab horses used frequently to be turned out for a two months' rest in fields with numerous other horses, I think it is very probable that the horse may have become infected that way and not by the hay.

Mr. H. Tudor Hughes (Oswestry): With regard to the question of bots, I think that the bot is far more serious when infesting the small intestine than when infesting the stomach. I have found the whole of the duodenum occluded with bots, so that the acid chyme from the stomach would not make contact with the hormone secreting cells of the duodenum; consequently, the amount of secretion formed would be reduced, with the result that less pancreatic juice would be formed and the digestion and nourishment of the animal seriously interfered with and loss of condition ensue. As to the question of treatment for bots, I would like to ask, why administer small doses of carbon bisulphide by the tube when it may be administered far more readily by capsule?

The question arises, following the remarks of Dr. Leiper on the peculiarity of the horse in having his most serious parasites in the large bowel, whether it would not be of some value to give oil of chenopodium in a keratin-coated capsule, for then it would be liberated nearer the seat of infestation, where it is required. With reference to moisture, I think we are all aware that permanent pastures that are subject to flooding are always more dangerous than others. Another important point with regard to young animals is to dose them before they become weak and the equilibrium between the host and the worm has definitely settled itself in favour of the worm.

Professor F. T. G. Hobday (London): I would like to refer to what Dr. Leiper has said about the horse probably being infected from the hay. I thought it was generally recognised that infection came from there. My father always told me that our borough horses were never made the subjects of *post-mortem* examination without finding strongyles in the intestine, and these horses had not been turned out for years.

Major A. Spruell (Dundee): My excuse for getting up is just to thank Mr. Pillers and also to call your attention to a very efficient drug, viz., creosote. Many years ago I had an experience of being called in to a large herd of Shetland ponies suffering from *Sclerostomum tetracanthum*. I think everything possible had been tried prior to my taking over the treatment—thymol (warm in milk), santonin and many other vermifuges. I tried creosote combined with turpentine and linseed oil and got excellent results. For scouring cases, if you give creosote alone in milk, or with eggs and milk, I think you will have a very fair measure of success. The dose is one drachm.

Mr. J. F. Healy (Midleton): I come from a breeding district where a lot of young foals get affected with red worm and I have found that the administration of oil of chenopodium and thymol mixed, is the best treatment.

Dr. A. W. Whitehouse (Glasgow): I have been trying for many years to find an anterior mesenteric artery, in an adult horse killed in the laboratory for dissection, that is completely normal; the main trunk may be right, but when you come to the right branch you practically always find the parasitic aneurism.

Mr. W. A. Macgregor, Junr. (Ayr): I also would like to congratulate Mr. Noel Pillers on his choice of subject and for the way he has followed it up; and to thank him for the benefit he has conferred upon all of us in classifying these parasites. (Applause).

I wish to ally myself with Major Rees-Mogg's remarks on the treatment with thymol. Mr. Smythe said it was good, but that it was not very nice to use.

I have had considerable experience in using thymol these last three years for strongylosis and I have had the same experience as Major Rees-Mogg, that you get a good evacuation of dead worms by using one ounce doses.

In Wallis Hoare (Revised Editon) you will find that thymol is recommended to be used up to one ounce doses on three consecutive days. I have not been brave enough to use it on three consecutive days, but I have used it in single doses of one ounce and have found it very useful indeed. I have used oil of chenopodium, but have had no satisfaction.

The President: I cannot allow to pass the opportunity of thanking Dr. Leiper for his very kind acknowledgment of the service which he says I was able to offer him in his younger days. Here you see one of those phenomena where Jack has enormously outstripped his master. (Laughter). With regard to the treatment of this vast subject, one thing I find to commend in it, above all others, is the emphasis which has been laid on the necessity for anti-parasitical treatment before clinical symptoms are observed. It is both preventive of disease and of further infestation with the parasites. If we can prevent disease processes by reducing and limiting the severity o the cases, we are doing better work. With regard to hay f

I am quite convinced that hay does convey infestation with strongyles of the various kinds. I have under my personal observation a number of horses that have never been out of London, never had any green meat for a number of years, and these animals have developed acute strongylosis and some of them have died. The problem, very simply, means that hay that is obtained from pastures known to be infected with the equine parasites, must be fed to cattle; if it is ruminants that are affected see that the hay from pastures infected with ruminant-infecting parasites is fed to horses and not to cattle.

With reference to animals affected with the smaller strongyles, trichonema, etc., it was suggested some years ago that the symptoms were due to the toxins setting up hæmolysis, therefore that the treatment for explusion of the worms should be combined with some form of hæmatinic.

Rotation of pasturage is effective and useful; it is the same thing, in effect, as the rotation of croppers; in the course of the one summer and the two winters the eggs and the larvæ will have become destroyed.

Concerning water in ponds, Dr. Leiper has pointed out that the water has no inhibitory effect on the eggs and the danger lies in the fact that horses almost always defæcate in the neighbourhood of the ponds at which they drink. I regard oil of chenopodium as by far the most important drug in the treatment of strongylosis. I have never seen the ill effects described; I think that is because one has paid more attention to the question of dosage—In the case of weakly animals unable to stand fasting for twenty-four or thirty-six hours, give a smaller daily dose, say ℥i. for a week or a fortnight. In the case Major Rees-Mogg referred to, the treatment extended over some months, and he had ℥i. doses per day, with ℥i. of thymol, and atoxyl hypodermically. The results were all that could be wished, but it was impossible to say which was the really effective parasiticide. Subsequent experience, however, leaves no doubt in my mind that it was the oil of chenopodium.

The Reply.

Mr. Pillers, replying to the discussion, said: I should like, in the first place, to thank Professor Leiper for the very kind and gentle way in which he let me off in opening the discussion.

I do not think I can give any satisfactory reason why the large intestine of the horse is the seat of so many nematodes, whilst these appear in the small intestine of other animals. We all know that the large intestine of the horse occupies physiologically quite a different position from that organ in the other animals.

Professor Leiper asks: Am I sincere in my classification of parasites into clinical groups?

Not on purely clinical grounds, of course, but neither are we sure of a large number of other conditions, until we have demonstrated an organism and I think the divisions are justifiable when one has demonstrated an ascarid egg, etc.

With regard to the question of taking a sample of fæces and centrifugalising it by any of the flotation methods, my point in mentioning what Professor Leiper said at Cambridge is that, quite unconsciously, he put the clock back a year or two, because a simple examination may not show the presence of eggs. I have used Sheather's method and found it quite satisfactory from an ordinary point of view. So far as intestinal parasites in the horse are concerned, I think it has served a useful purpose, although I know it has its limitations in some directions.

With regard to the question of the colour of the red worm, I quite agree with what Professor Leiper says, that it is in the substance of the worm rather than the alimentary canal and that the colour is the colouring of the worm and not related to its ingesta.

With regard to the rotation of croppers, five cows to one horse; when one is putting animals together one has to take into account not only veterinary reasons, but farmers' reasons. It is well known that horses damage the grass crop badly and therefore farmers like a high percentage of cows. In one outbreak we found that if we had five cows to one horse the owner could not grumble about the condition of the grass and that proportion seemed to be about what we wanted to control the disease. No immature equine forms were found in the bovine fæces. Concerning infestation from hay, I do think that we have to realise that parasitism is rather ubiquitous and that there is a large number of factors which may introduce it into a stable, in addition to hay: new horses are often bought and there are a large number of other possible means of entry. I think we are getting rather too exact in applying methods of trying to trace the infection into premises, when really we should go carefully owing to lack of means of actual demonstration.

I must thank Mr. Smythe for his opening remarks, I do not think I need answer a lot of them in detail because some of his statements are diametrically opposed to what I have said and one must therefore leave it at that. (Laughter.) But if I might say so, it seems to me that the basis of his philosophy is the American saying "A few worms is good for a dog; it keeps him from brooding and thinking he is a dog." (Renewed laughter). According to the degree of clinical importance which you attach to the worms concerned, you will say that a few worms either do or do not count from a disease point of view. But I think we ought to have a high standard and try to do away with anything that interferes with the health of the animal and which may lead to a heavy infestation somewhere and sometime or other. (Applause.) I think you ought to attack ascariasis whenever you have a chance, realising that such action does good to the horse and also that it does some good to you. I agree that it is quite possible to find red worms in fæces without any gross changes in the animal. I related such cases in my paper. Mr. Smythe mentioned a point, viz., that I said we all know the immunity which develops with age; I meant develops with ordinary age—I do not mean that which develops with age and then gradually disappears when the animal's teeth commence to drop out. (Laughter.) Youth and extreme old age are important predisposing factors to parasitism. With regard to treatment for tape worm, I must say that I have seen very few cases treated. In one or two cases that I have seen attempts have been made to empty the colon and then dose with linseed oil and turpentine. Odd worms have been passed. Concerning the question of bacteria, if you take lesions of the bowel in

which there are larval forms and express the pus-like material and stain it, you will find micro-organisms, and I am sure that you would find something if you went further afield. I think the other points raised have been answered by other speakers, such as, for example, the use of intravenous atoxyl, answered by Major Rees Mogg. I was, however, asked why one should use the stomach tube when capsules can be given. Sooner or later you will get a horse that you cannot ball; sooner or later you will get a horse that will prick the ball and you will get very alarming symptoms with carbon bisulphide; it is simply a matter of safety first.

I do not think I have anything much to say with regard to Major Davenport's very valuable contribution. He mentions the importance of lesions of the ileo-cæcal colic artery and with that my paper agrees. The objections raised to thirty-six hours' fasting seem to fade into insignificance when we think of his period, viz., sixty hours.

In Mr. Tudor Hughes' district, *Gastrophilus nasalis* is common in the small bowel and it is important in producing obscure symptoms; he explained one of the reasons why.

Major Spruell mentioned the measures he adopted with much success in an outbreak in Shetland ponies due to *Sclerostomum tetracanthum* and eulogised the value of creosote. I do not think that his reasoning was quite sound clinically, because if you were to drench animals with turpentine and linseed oil alone as a control against your work with these two drugs, *plus* creosote, you would find that turpentine constitutes a very good anthelmintic indeed. I think probably in the case of his animals most good results were due to the turpentine he used with the creosote, but I can say that creosote is of value in controlling the diarrhœa in a bowel that has been badly damaged.

I must thank you for the kind manner in which you have received my disjointed effort and I hope we have all benefited by the remarks which have been made by the openers of, and other contributors to, the discussion. (Applause.)

Minister of Agriculture and Foot-and-Mouth Disease.

At a meeting of the Council of Agriculture for England, held in London on October 21st, Mr. Guinness, the Minister for Agriculture, in the course of a statement, said that in spite of the rather depressing experience of the last few weeks, taking the year as a whole, there had been much greater freedom from foot-and-mouth disease. In the first nine months there were 33 outbreaks, compared with 183 in the first nine months of 1926. Of the nine outbreaks this month, eight were linked up in Somerset, and there was no doubt that the disease had been spread there by the failure of farmers to report as soon as their animals showed symptoms of trouble. Outbreaks had been discovered merely by the patrolling of inspectors. This recrudescence was very unfortunate, especially from the point of view of the export of pedigree stock. They were, however, pressing on with the provision of quarantine stations to enable export still to take place under certain conditions, and it was hoped that the first station would be opened in London early next year. At present the most important temporary activity that was going on was perhaps the Imperial Agricultural Research Conference.

Aspects and Problems of Comparative Medicine.*†

Need for Co-operation between Specialists in Human and Animal Diseases.

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(*Reproduced by courtesy of the Editor of "The British Medical Journal."*)

In presenting this small and, I fear, quite inadequate contribution for discussion by the Section of Comparative Medicine I feel that I cannot do better than quote the words of the late Sir Clifford Allbutt in another place and upon a similar occasion:—

> "If for years slowly and almost silently our work makes it way we must be content; our experience of the world teaches us to be content; but happily, now and then, after long hewing in the dark forest we break into light, we find ourselves almost suddenly upon a peak, our way open and bright before us, and our cause justified before men. The barriers of convention, which ought to be so slender and occasional, are of all the most inveterate and impregnable. Of such have been the barriers devised by mediæval perversities which, to its grievous injury, have split up medicine into fractions. As physic was divorced from surgery, and mind from body, so the diseases of animals and plants were *separated* from those of mankind."

In that last sentence Sir Clifford put the case of what is called comparative medicine in a few words. It has become separated from the mother science, medicine. For some reason or other, but probably through ignorance of what has gone before, comparative medicine has come to be regarded by many as something in the nature of an innovation—a breaking of new ground, an inculcation of new ideas, and perhaps even the initiation of a new branch of the science of medicine. But this is not so. During the past century there has been a steady, sure progress in the study of comparative medicine in all parts of the world, but especially in tropical and subtropical countries. The reason for this is that animal diseases, particularly those caused by protozoal parasites and invisible viruses, have been recognised as a serious economic menace, and therefore more or less adequate facilities have been provided for their investigation. The general progress which has been made in comparative medicine appears to have received but little notice; indeed, it is not an uncommon experience to find the comparative aspect of the many phases of the mother science, medicine, regarded as something quite new—in fact, almost unique, or at best a more or less comprehensive recital of some of the diseases of the lower animals which may affect man also.

This misconception of the real state of affairs is probably easily explained. The encyclopædic tradition which had persisted from Aristotle through the Arab and mediæval schools down to Herbert Spencer has ceased to exist. It is forced upon us in our own day that in a pursuit so many-sided as medicine, whether in its scientific or in its practical aspect, we have to submit more and more to that division of labour which has been a condition of advance in all other walks of life. It is now fully recognised that that division of labour which may appear to disintegrate the mother science of medicine really unites it. While pathology, for example, which is especially the science of medicine, was winning territory on one side

* Report of a discussion at a joint meeting of the Sections of Comparative Medicine and Pathology and Bacteriology at the Annual Meeting of the British Medical Association, Edinburgh, 1927. Principal O. C. Bradley presided.

† The following particulars in connection with this Section (newly-established by the British Medical Association) will be of interest to our readers:—*President:* Principal O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S.; *Vice-Presidents:* Professor J. B. Buxton, M.A., F.R.C.V.S., Dr. F. A. E. Crew, M.D., D.Sc., Ph.D. and Major G. W. Dunkin, M.R.C.V.S.; *Hon. Secretaries:* Dr. T. W. M. Cameron, M.A., Ph.D., M.R.C.V.S. and Professor J. Russell Greig, M.R.C.V.S. Meetings were held on 21st and 22nd July in the Pathology Theatre, University of Edinburgh.

from physiology, of which, in a sense, it is but an aspect, and on another by making ground of its own in the *post-mortem* room and museum of morbid anatomy, and was fusing these gains in the laboratory so as to claim for itself as a special branch of science, by virtue of peculiar concepts, its due place and provision—provision in the establishment of chairs and of special laboratories for its chemical and biological subdivisions—clinical medicine was illustrating the truth of the experience that teaching and research must go hand-in-hand, the one reinforcing the other.

Unfortunately, the necessary development of specialism has led to the almost inevitable sequel—watertighting. The many children, grandchildren, and great-grandchildren of the mother science seem in their self-centred interest to forget that they are but the offspring of the parent. That branch which deals with the comparative aspect of disease has been accused of drifting farther and farther away from the parent sciences during the past century, but the fault, if fault there is, is not peculiar to that one branch of medicine. Fortunately the current of thought is now changing, and the attitude of splendid isolation is less evident. Any attempt to prescribe a dividing line between the scientific study of the diseases of the lower animals and those of man is inevitably doomed to failure, and this fact is, fortunately, becoming better realised. Pasteur shed light upon all aspects of medicine, but above all upon comparative medicine. The stimulus provided by the master has been directly responsible for the world-wide progress which has been made during the past century. But an attitude of complacency must find no response in the hearts or minds of those who are engaged in contributing to the study of comparative medicine.

A most cursory survey of some of its many problems which have been or are in the process of being investigated cannot fail to create in the minds of those who are responsible for the prosecution of those and similar problems an overwhelming sense of responsibility in relation to the general well-being of men and animals.

The field of comparative pathology perhaps affords one of the best examples of the essential nature of the demand for close co-operation between specialists in the study of human and animal diseases. This does not for one moment suggest that the importance of such co-operation rests with a discussion of those diseases which affect both men and animals, for, however important they may be, they are relatively few in number in comparison with the diseases which are peculiar to the individual species, but which, nevertheless, have a general importance in the study of disease processes as a whole. It is true that the fact that a causal organism is common to both man and the lower animals greatly facilitates the work of the histologist, bacteriologist, immunologist, and epidemiologist. Tuberculosis probably affords one of the best examples of this, for it is only by the study of the artificially produced disease in experimental animals, and in those which acquire the disease under natural conditions that much of our knowledge has been gained, and it is certain that any advance in the prevention or cure of tuberculosis in man will depend upon observations made in animals. Again, recent advance made in the study of tumours has resulted from work carried out in animals in which experimental tumours can be produced, and others in which a peculiar form of tumour naturally occurs. One cannot fail to be impressed by the possibilities which might result from a systematic study and comparison of the apparently closely related neoplasms which occur in man and in various of the lower animals.

Whatever may be the outcome of the controversy concerning the etiological identity of the variolas of man and the lower animals, the fact remains that the observations of Jenner were of fundamental importance in establishing at least a cross specificity in the case of cow-pox and small-pox, and it is equally certain that any progress which may be made in the study of cultural and immune processes will depend upon investigations into the variolas of the lower animals.

Unfortunately, from the experimental point of view, it not infrequently happens that the causal organism of a disease in man is either non-pathogenic for the lower animals, or produces in them lesions which do not resemble the human form of the disease. In such instances it is impossible or at least difficult to study etiological and preventive measures which might be applied to the human subject. But it is sometimes possible to find that a disease peculiar to one animal species has a very definite resemblance to a disease which is peculiar to another species—as, for example, distemper in the dog and influenza in man. A comparative study of the two diseases may reveal many common features, and knowledge gained from the study of the one may prove to be of value in the study of the other. As a result of investigations into a number of the diseases which are peculiar to certain of the lower animals and which are caused by invisible viruses—for example, rinderpest, foot-and-mouth disease, dog distemper, and others—several methods of inducing immunity to the disease have been devised, and it is reasonable to hope that, apart from the benefit which is likely to be conferred upon the natural host, further research may reveal the possibility of applying similar methods to diseases of a like nature which are peculiar to man.

The impetus which was given to the study of the anærobic infection of wounds during the war has left its mark upon the bacteriology of several diseases of the lower animals, for while it was previously well known that many of the spore-bearing anærobes which were found to play an important part in the pathological complex "gas gangrene" were commonly associated with certain well known and similar diseases in the lower animals, great progress was made in the etiological, cultural, and toxigenic properties of these organisms as soon as their significance in the military economics of the time was realised. Under normal conditions, however, they are of little importance in pathological conditions in man as compared with the lower animals, and it is certain that, while the further study of these organisms may receive but little attention at the hands of the human pathologist under peace conditions, much further light will be shed upon their relationship to pathological changes in the lower animals, and upon specific toxigenic variations in members of the same family—as, for example, has been observed in the case of *B. botulinus*.

Quite recently nutritional diseases have occupied a prominent position in comparative medicine. Contributions to the study of various aspects of organic and inorganic deficiencies under experimental conditions have done much to increase our knowledge concerning the probability of certain diseases of animals which are kept under apparently normal conditions being due, in part at least, to a deficiency of one or more of the accessory factors. One of the most important questions which has arisen as a result of purely laboratory experiments is whether, and to what extent, the results obtained with one animal are applicable to the case of other animals and to man. We know from carefully conducted experiments that deprivation of vitamin B will cause paralysis in rats as well as in fowls and in pigeons, that the elimination of vitamin C from the diet of monkeys and guinea-pigs will result in the production of the characteristic hæmorrhages and bone lesions of scurvy. Similarly, in rabbits fed under such conditions, while there is an absence of hæmorrhages, the characteristic pathological changes can be observed in the bony tissues. White rats, on the other hand, are little affected by the absence of vitamin C in their diet, but fail to breed satisfactorily under such conditions.

The absence of vitamin A has been shown to result in ophthalmia (first described by McCollum in rats) in poultry and in infants, in defective calcification of bone in puppies, rats, poultry, and young children. And further, the action of light in correcting a deficiency has also been demonstrated. Thus there is a schedule involving several vitamins and a series of corresponding "deficiency diseases." But there is an even more important issue represented by the widespread disturbances of a non-

specific nature which are perhaps produced by vitamin deficiencies—disturbances which have a direct effect upon the severity of other diseases, especially bacterial infections. It is not an uncommon experience, when investigating widespread outbreaks of disease, especially in pigs, to find that the organism which appears to be responsible is one which, under ordinary conditions, is regarded as of little pathogenic significance, yet it appears for some inexplicable reason to have developed an exalted virulence. The ration usually appears to be well balanced and all that could be required, yet slight alterations in the constituents —especially in the direction of increasing the amount of vitamin C—frequently lead to a marked improvement in the general condition of the animals.

Another and equally important aspect of deficiency diseases has been investigated at the Rowatt Research Institute, Aberdeen.

Research into some problems of mineral metabolism has already been productive of information of considerable economic and scientific value. Investigations have shown that natural pastures with a low content of minerals have a low nutritive value for sheep, and that not only is the percentage of progeny from these animals low, but the mortality is often high. These and similar observations are proving of considerable importance, not only in the case of animals in this country, but particularly in some of the colonies. Of no less importance are the experiments which have been carried out to show that artificial ultra-violet irradiation is capable of increasing the absorption and retention of calcium and phosphorus in young pigs. Again, the importance of colostrum in the early life of young animals, apart from its purely medicinal effect, is well known, especially in regard to the temporary protection which it is believed to afford against bacterial invasions. It has hitherto been generally assumed that this protective power is to a large extent due to the high anti-body content of the material, but it has been found that the iodine content is also very high, and in view of the claim which has been made that the feeding of potassium iodide to mares is a preventive of joint-ill in their progeny, the possibility that iodine may play an important part in the protection of the new-born animal against disease is worthy of serious attention.

Investigations into the physiology of reproduction which have been carried out at the Animal Nutrition Institute at Cambridge have added considerably to our knowledge of these normal processes, and open up a large field for investigation into the abnormal conditions which are so commonly met with in the lower animals and in the human subject.

Marshall's contribution to the study of the conditions governing parturition cannot fail to stimulate further research in this direction, especially since, as he points out, although certain factors are common, the conditions, though generally constant within a particular species, vary widely in different species, and even among closely related forms as well as in individuals.

There are, of course, many other aspects of deficiency diseases which are of great interest from the comparative point of view, which no doubt will be dealt with by others who are to take part in the discussion.

Experimental comparative physiology has not received the attention which it deserves, especially in the case of the lower animals. It has not infrequently happened that an attempt has been made to study the abnormal rather than the normal, often with results, which if capable of any sort of interpretation, have been entirely misleading. There is an enormous scope for research which will lead to a better understanding of many of the normal functions of and processes in the animal body. Such a study should progress with, and not independently of, that of the abnormal.

Another aspect of comparative medicine is that which has been termed tropical veterinary medicine. Here, again, the relationship between the diseases of man and of the lower animals is of the most intimate character. We may take as a fair example of this those which have been grouped under the heading of trypanosomiases. The classification of the causal parasites is now recognised to be far more difficult than was originally supposed. The morphological and biological characters are in themselves insufficient for this purpose, whereas the mode of development in the fly is of fundamental significance. As a result of more recent work, it has been found to be necessary to recognise different strains of the same species of organism, but the process of evolution of such strains yet remains to be determined, as also do the changes in virulence and in morphology which result from passage. There is also a call for improvement in the methods of diagnosis of infection with the various species of trypanosome. Watson showed the value of the complement fixation test in the diagnosis of dourine, while E. M. Robinson in South Africa has confirmed this, and in addition has shown that animals infected with *T. brucei* react to the test when *T. equiperdum* antigen is employed ; while the serum of those affected with *T. congolense* or *T. vivax* does not usually react in the presence of that antigen, but the former may do so with the specific antigen. The many chemotherapeutic problems relating to these diseases which yet remain to be solved can only be satisfactorily carried out in animals, and preferably in those which are naturally the subjects of the disease.

It would not be possible to close even such a sketchy and incomplete contribution as this undoubtedly is without some reference to the vast field of experimental comparative medicine represented by artificially acquired immunity. Since the time of Pasteur it has been recognised that experimentation with animals offers the only satisfactory method of determining the relative merits and demerits of the various methods of inducing a state of specific resistance to disease, not only on account of the relatively small value of the subject, but because large numbers of animals can be employed for the purpose, and, moreover, they can be maintained under natural conditions. Observations upon active immunisation of horses against tetanus by means of toxin-antitoxin mixtures rendered a similar procedure possible in soldiers during the Great War. Similar experiments which have since been carried out with the modified toxins of other spore-bearing anærobes have enabled us to confer an active immunity against a variety of diseases of sheep. The use of bacterial suspensions, consisting of living virulent or avirulent organisms, or of those which have been killed by a variety of means, has enabled us to control a number of serious epizootic and enzootic diseases of the lower animals. Experimentation along these lines is constantly progressing, and cannot fail to be of economic importance from the agricultural point of view as well as from that of mankind.

For an opening address on the subject of " Some Aspects and Problems of Comparative Medicine," I realise that my remarks may be considered too narrow in their scope. But the aspects and the problems are so many, while the range of each is so extensive, that it is impossible in the present circumstances to do more than mention a few, and that in a very cursory manner. Those who are to follow me will no doubt make good the deficiencies which are so very obvious in my remarks.

* * * * *

Discussion.

Dr. Andrew Balfour (London) thought that one aspect of comparative medicine which would appeal to all was the essential unity of human and veterinary medicine ; one problem well worthy of discussion was how this unity might, at least in some degree, be realised. This was probably better exemplified in the field of tropical medicine than elsewhere. As comparatively recent examples he cited Pfeiffer's work on rabbit coccidiosis and its relation to human malaria, and Theobald Smith's work on the tick in Texas fever ; since those days human and veterinary medicine had advanced hand in hand in the tropics. He recalled Sir Patrick Manson's announcement about Ross's work twenty-nine years previous ; his talk was largely about sparrows, crows, and mosquitos. After referring

to trypanosomiasis, leishmaniasis, myiasis, ankylostomiasis, rabies, and bubonic plague, he passed to the consideration of the experimental method, and the necessity of enlisting the aid of the veterinarian when employing animals in medical research. He maintained that no laboratory engaged in work on tropical medicine was properly and fully equipped unless veterinary medicine was represented, and he mentioned in this connection the system in operation at the London School of Hygiene and Tropical Medicine, with special reference to the value of its association with the Zoological Gardens. He regretted the tendency to cleavage in tropical medicine, and pleaded for combination under a research roof, while routine and clinical work could be carried out in laboratories attached to the respective hospitals. He hoped that the new Research Committee of the Colonial Office would accomplish something in this direction.

Dr. W. H. ANDREWS (Ministry of Agriculture) remarked that the problem of the filterable viruses furnished an excellent example of the essential unity of pathology and of medicine on the scientific side, although in the practical applications there were fundamental differences. The filterable viruses and the diseases they caused were now attracting much attention in medical and veterinary circles in both temperate and tropical regions. They constituted the most urgent problem of the present day, and the slow progress in their study suggested that new conceptions and a new technique were needed. Veterinary pathology had already furnished much that was valuable for the human pathologist, but more could be expected from research work organised on more generous lines than in the past. The veterinary pathologist should have the great advantage of working with experimental animals of the species naturally affected by a disease, but this advantage had usually been sacrificed to financial considerations It was known how narrowly specific might be the relations between host and parasite, and it should be recognised that guinea-pig and rabbit studies, however convenient and valuable (as long as their limitations were realised), could be entirely misleading when applied to animals of other species. Moroever, the reaction to a poisonous substance could also be narrowly specific ; for example, *Matricaria nigellaefolia*, apparently harmless to all other domestic animals, induced a fatal intoxication in bovines. Recent work on chronic plant intoxications in animals had great interest for the human pathologist, but much of it was not at all widely known. In connection with mineral deficiencies, the outstanding work of Theiler and Green at Pretoria deserved special mention. They had succeeded in establishing the etiology of the bovine disease lamsiekte, but their work had had results far exceeding that of controlling lamsiekte, although that disease had formerly caused very heavy losses indeed (see JOURNAL, September 24th, p. 559). With respect to vitamin deficiency, it seemed very doubtful whether any of the domestic herbivora, under ordinary conditions, ever suffered severely from this cause, but specific avitaminoses occurred naturally in pigs and dogs, and probably in fowls also. Dr. Andrews felt confident that, however important such work might prove later to the human pathologist, the study of the diseases of the domestic animals, would be best and most successfully pursued for its own sake, although human and veterinary pathologists should naturally co-operate and exchange information as freely as possible.

Mr. G. W. DUNKIN, M.R.C.V.S. (Mill Hill), stated that the vast fields awaiting investigation and the numerous diseases common to man and the lower animals lent ample support to the suggestion of closer and more intimate co-operation between human and veterinary medicine. The Section of Comparative Medicine of the Royal Society of Medicine was flourishing, its membership was still increasing, and its meetings continued to be of the greatest interest to both branches of medicine. Nevertheless, the facilities already existing for co-operation between the two branches were inadequate for the necessary development of this team work. He stated that, with Dr. Laidlaw, he had been engaged for the past four years in the investigation of dog distemper. Although this disease was specific for the dog and ferret and did not affect human beings, there were, nevertheless, many phases which closely resembled other conditions in man, and it was hoped that the results of this research would tend to the better understanding of certain human ailments. Another disease (Johne's disease of cattle) which was receiving his attention did not, as far as he knew, possess any analogy in human medicine, but it was evident that the results would not be without interest to human bacteriologists and pathologists. It was good to know that diseases of lower animals and their investigation could be of assistance in this way, but he submitted that they were matters for team work, in order that a better understanding of the baffling pathological conditions could be obtained.

Mr. JAMES MCALLAN, M.R.C.V.S. (Aberdeen), suggested that the public health aspect of comparative medicine was by no means the least important, and he emphasised the necessity for a very close co-operation between the two professions. In the field of meat inspection, while the medical officer of health would always have the last word on the fitness or unfitness of meat for human food, it seemed necessary that the veterinary surgeon should co-operate, since he had the better knowledge of animals in health and disease. In Scotland this co-operation had been fully established. In the production of milk from the hygienic standpoint the veterinary surgeon had a big field, which was further extended by the control of milk-spread tuberculosis. From personal experience the speaker could emphasise the value of co-operation between the two professions in the investigation of food poisoning outbreaks spread by milk. On two occasions he had been able to trace milk-borne outbreaks of food poisoning to the infection of cows with Gaertner's bacillus. It was on such occasions that he appreciated fully the value which would accrue to medical practitioners from making full use of the veterinary surgeons on the public health staff.

Professor D. C. MATHESON, F.R.C.V.S. (Edinburgh), said that for the past fourteen years he had acted as veterinary pathologist to the Scottish Zoological Society. As a matter of routine every herbivorous animal was examined microscopically for anthrax before the necropsy, while in the case of carnivores the possibility of glanders had always to be considered. These animals frequently suffered from " menagerie pneumonia," and cultures from the lesions on potato often yielded an early growth of *B. coli* with a superficial resemblance to the glanders bacillus. A recent survey of the records showed that among the animals, excluding birds, tuberculosis occurred in 4·7 per cent. ; in birds the incidence was 7·1 per cent. Among domestic fowls examined in the laboratory for the same period the incidence was 10·3 per cent. Impaction of the intestine by vegetable fibre, twisted by the peristaltic movements into a veritable rope, was not uncommon among the larger cursorial birds such as the rhea. Impaction of some portion of the intestine, usually with vegetable fibre, was responsible for death in 10·1 per cent. of the fowls examined during a period of thirteen years. Neoplasms were rare among the animals in the gardens.

Dr. J. G. NASMYTH (Edinburgh) emphasised the necessity for investigations into the origin of epidemic and epizootic diseases, and into the periodicity of epidemic diseases that were now controlled and no longer seriously menaced the health of the community. It was also desirable to know why, in the case of " carriers," the causal organism was able to lie dormant for long, and yet when a suitable host offered, assert its pathogenic power. He also emphasised the importance of co-operative and co-ordinated investigations by the biologist and the biochemist in association with the pathologist and the clinician. He believed that it would be to the benefit of comparative medicine if the Veterinary College were affiliated to the University, and the Animal Diseases Research Association were similarly linked to the Veterinary College in Edinburgh. Such affiliations he was convinced would lead to co-ordination in research, and the consequent

benefit of mankind by the discovery of the fundamentally common conditions which caused human and animal diseases.

Dr. F. A. E. Crew (Edinburgh) remarked that so much stress had been laid upon the need for greater co-operation between the medical and the veterinary professions that he could not refrain from asking whether they knew of what and to whom they spoke. Co-operation in research must always be between individuals. He who sought help eagerly found it, if such help was available, in the communion of minds. Those engaged in research were conscious of shortcomings, and the true searcher after knowledge recognised no monopolies : the knowledge of one was available for all. Co-operation was not based on professional organisation but on common humility, for no professional organisation could over-ride personal antagonism. Far too much was made of the distinction between the medical practitioner and the veterinarian ; it was the problem and technique of investigation, and not the material, that really united men. Medicine was too disposed to content itself with study of the causes and the effects of disharmony. They ought to recognise clearly that the control of the future evolution of man and of animals lay in the hands of man himself ; and that they must help to decide what man should become and how animals might evolve, setting themselves the task of guiding man and beasts in the lines of their destinies. It was for them to think of the eradication of those hindrances, and the securing of that degree of material and physical comfort which was a pre-requisite of spiritual development. Their great contribution would concern the breeding of man and animals naturally highly resistant and immune to diseases which threatened their existence.

Professor E. E. Glynn (Liverpool University) believed in the advantage to human medicine of the study of comparative pathology. His own pathological museum contained many specimens of animal disease which he used in teaching medical students.

Mr. W. A. Pool, M.R.C.V.S. (Edinburgh), stated that there was obviously agreement as to the necessity of greater co-ordination between the two branches of medicine. Investigation of factors concerning animals, both in health and in disease, had in the past been almost limited to consideration of those which were of immediate economic importance or of use in throwing light on problems affecting mankind. As a result they lacked essential knowledge of many things which should at the present day be well understood. Outstanding examples could be quoted in the field of physiology, such as digestion in ruminants and ungulates, and also in connection with pharmocology, as, for example, the action of certain alkaloids on the autonomic nervous system of equines. This was due to research into animal problems being limited to those of urgency and by methods of applied science ; there had not been enough investigation for the sheer desire for knowledge. Prominent examples of problems in which greater co-ordination of the two branches of medicine was necessary were the study of the streptococci of the bovine udder and the effect of nutrition on resistance to disease. The policy adopted in distributing public funds to finance investigations into problems of animal disease tended to foster this policy of attending only to questions of immediate practical importance. Subsidised laboratories were expected to justify their existence in the eyes of the public as they proceeded. This entailed the early and frequent issue of reports, and, to ensure the certainty of having something to report, investigators felt bound to limit their sphere of actions largely to problems which, while being of immediate practical importance, were also likely to produce definite results.

Lieut.-Colonel E. D. W. Greig (Edinburgh), strongly favoured close co-operation between medical and veterinary pathologists. From his experiences in the East, he gave several instances of the importance of this combination, including the investigation and treatment of rabies and the study of tuberculosis in India. He was convinced that the recent appointment by the Colonial Office of a Medical Research Committee would help materially in co-ordinating research in the two branches overseas.

Dr. T. W. M. Cameron (London) drew attention to the fact that no one had yet attempted to formulate a definition of "comparative medicine." There was a tendency to regard it as veterinary medicine, or, more frequently, as veterinary diseases in relation to man. He thought that it was neither of these. Defining medicine as the arts and sciences of preventing or removing disease, then comparative medicine was the comparison of the arts and sciences of medicine as relating to man, the domestic animals, the non-domestic animals, and even plants. Of these, probably the most important was comparative pathology. If physiology were regarded as a study of the normal reactions of an organism to normal stimuli, then pathology was, for the most part, the study of the normal reactions to abnormal stimuli ; neoplasms and similar conditions of unknown etiology might well prove to be abnormal reactions to either normal or abnormal stimuli. Comparative pathology, then, would be the comparison of the host reactions of various hosts to the same abnormal stimulus. Its aim would be to elucidate the fundamental laws underlying the methods by which the body became diseased and by which it fought against disease. Thus, while including both human and veterinary pathology, it was co-extensive with neither. It was, moreover, different from bacteriology or parasitology, sciences concerned with causes only, while pathology was concerned with effects. The speaker then illustrated this concept of comparative pathology by describing the reactions of a variety of hosts to the tubercle bacillus and to the hydatid cyst. Comparative pathology was a natural sequel to comparative physiology and was a subject as capable of standing by itself in the university curriculum as any of the other divisions of science. If comparative pathology and the other ancillary medical sciences were regarded in this way, then obviously "comparative medicine" should really be called "medicine," and what was generally regarded as "medicine" should be re-christened "human medicine." Man was only the most domesticated of the mammals, and in these neo-Darwinian days there was no reason why an unqualified name should be given to the purely human sciences, while grouping those concerned with the other domestic animals under the cumbersome title of "veterinary medicine." He could not accept the statement that human medicine was the mother of veterinary medicine ; she was merely the elder sister who for so many years had acted as foster mother. The true parent was only now being recognised as comparative medicine, and it was to her that both the sisters, the elder as well as the younger, must look for the fundamental principles which were necessary before any real understanding of disease was possible.

New Method of Milk Transit.

Glass-lined Tanks on the L.M.S.

In conjunction with a large wholesale milk firm the London Midland and Scottish Railway Company are introducing a glass-lined tank for the conveyance of milk.

This is an entirely new departure in the railway transportation of milk in the United Kingdom, and when the system has been duly developed and extended the familar rattle of the milk churn will be heard no more. The tanks, fixed on steel under-carriages, are insulated against fluctuations in temperature so that the milk will reach its destination in good condition. Each tank holds 3,000 gallons and does the work of three ordinary milk vans. Two thousand gallon tanks are also being brought into use. Something like 100,000,000 gallons of milk are carried annually by the L.M.S. Railway ; special trains cover many thousands of miles daily. Platforms, sidings and lifts have been constructed specially for this traffic, while everything possible has been done to ensure the quick and clean transport of England's milk supply.

The Veterinary Record.

29th October, 1927.

COMPARATIVE MEDICINE.

The ninety-fifth annual meeting of the British Medical Association held at Edinburgh this year was notable for many things—not the least of which was the creation of a new Section of Comparative Medicine under the presidency of Dr. O. Charnock Bradley. In conjunction with the Section of Pathology and Bacteriology, this Section held two meetings, both of which took the form of general discussions—the first on "Immunity," the second on "Aspects and Problems of Comparative Medicine." By courtesy of the Editor of the *British Medical Journal*, we are able to publish to-day, simultaneously with our contemporary, the full report of the latter meeting.

The subject chosen for discussion was general and very comprehensive, but this choice, as the President explained, was deliberate in order that workers in different specialised fields might feel themselves free to review their own particular speciality as a component of the enormously wide domain of Comparative Medicine. Full advantage was taken of the wide field offered. Medicine in the tropics as well as at home has been surveyed. The clinician as well as the laboratory worker has given expression to his views. Preventive as well as curative medicine has received consideration. Diseases of wild as well as domestic animals have been discussed.

The bonds uniting the two professions, always recognised by the few, are daily becoming more evident to the many. The Royal Society of Medicine welcomed our co-operation when, a few years ago, it inaugurated its Section of Comparative Medicine. Joint meetings between branches of our own association and the medical societies are of frequent occurrence. Nor is this movement confined to Britain alone; in the Dominions and Colonies the same spirit is manifest. The recognition of the importance of Comparative Medicine by the British Medical Association at its annual meeting has given official approval to a liaison which is now recognised as essential to the general progress of medical science.

Looking at Comparative Medicine in retrospect, we see that, although the name is new, the subject is not. The foundations of modern Bacteriology were laid by Pasteur within its domain. Tropical medicine, with its enormous numbers of arthropod vectors of disease, owes much to Theobold Smith's experiments with bovine Babesiosis. Modern physiology is largely built on investigations carried out with the lower animals. Numerous pathological conditions in man—cirrhosis of the liver, for example—have been satisfactorily explained only after a study of the corresponding conditions in animals. On the other hand, veterinary medicine and surgery owe much to human medicine and surgery and it would be difficult to say which is the greater creditor.

The vistas of the future are no less striking. Tuberculosis and rabies, to mention but two of the greater scourges of mankind, can be controlled or eliminated solely by co-operation between our two professions. The diseases of man and his animals differ in degree only—fundamentally they are identical. It is true that economic and other factors often prevent the full expression of the veterinary surgeon's knowledge and skill; but his object is in no way different from that of workers with the diseases of man. The work and problems of veterinary pathologists, bacteriologists, parasitologists, biochemists, differ from those of the human worker only in the material used. Comparative medicine concerns itself with resemblances and leaves differences to its more narrow applied branches. But continuous expansion in any of these branches is almost impossible without the growth of the main stem.

This movement for the closer and yet closer co-operation between all those concerned with disease is world-wide in its application although probably more official expression has been given to it in the British Empire than elsewhere. The fundamental importance of this collaboration cannot be over-estimated and nothing but good can come from it. Comparative medicine is the link binding the veterinary profession to the medical—the blood tie which inseparably joins two sister professions, to continue the metaphor with which the Edinburgh meeting opened and closed. This blood tie has always existed but it is only its full recognition which will bring these two sisters together and permit of the removal of the many obstacles—insurmountable by either alone—which beset their paths: a recognition which gives a new and an extended meaning to *Vis unita fortior*.

R.C.V.S. Library.

The following books have recently been added to the Library:—

Leighton, "The Principles and Practice of Meat Inspection, 1927;" Schmaltz, "Atlas der Anatomie des Pferdes," Vol. 4; Crew, "The Genetics of Sexuality in Animals," 1927; Kolle and Wassermann, "Handbuch der pathogenen Mikroorganismen," 1927; Jakob, "Tierärztliche Augenheilkunde," 1927; Savage, "Milk and the Public Health," 1922; Rolleston, "On Writing Theses"; L'Hoste, "Manuel de Médecine Légale Vétérinaire," 1926; Linton, "Animal Nutrition and Dietetics;" Smith, "A History of the R.A.V.C.," 1927.

Books and pamphlets may be borrowed from the Library by Members of the College on payment of postage both ways. Apply to the Librarian, 10 Red Lion Square, London, W.C.1.

CLINICAL REPORT.

Twist of the Single Colon in a Cow. Operation—Recovery.

By R. H. SMYTHE, M.R.C.V.S., Camborne.

The subject was a small Guernsey cow, five years old, in moderate condition.

July 21st, 1927. Owner complained that cow was passing no fæces and had no appetitie. Appearance normal. Administered mag. sulph. 1 lb., aloes barb. 1 oz. treacle 2 lbs., warm water, one quart.

July 23rd, 8 *p.m.* Symptoms of acute colic. Cow constantly kicking at belly, frequently lying and turning head to right flank. Expression anxious, and eyes very full and staring. No peristaltic movement audible. Rectal examination: no fæces, absence of straining, no blood visible on withdrawing arm. High up in the right flank was an unyielding, elongated mass. In the right lumbar region, a loop of tympanitic bowel could be felt. Pressure on either of these caused pain, evidenced by groaning and crouching. Displacement of bowel was diagnosed, with a possibility of intussusception. Operation was decided upon but postponed until the following morning. Administered chloral hydras, 2 oz.

July 24th, 10 *a.m.* Rectal examination revealed no change. No fæces present. Pain very acute. The cow was cast on the left side and both hocks were tied together. The right flank was clipped and shaved, scrubbed with a strong solution of Fecto, dried, and swabbed with surgical spirit. A boiled towel, provided with a "window," was laid over the abdomen. During this procedure, chloroform was administered, the head being raised on a bag, filled with straw.

With aseptic precautions, an incision five inches long was made in the right flank, commencing a few inches below the external angle of the ilium. The muscles were divided separately in the direction of their fibres. Before puncturing the peritoneum, bleeding was controlled by plugging the wound for a few minutes with boiled cotton wool.

The hand and arm were inserted up to the elbow, the hard mass was located and an attempt was made to bring this through the operation wound, but owing to its thickness and rigidity this was impossible. It could, however, be brought into view and was seen to be a twisted, thickened and congested length of mesentery. The tympanitic loop was then sought and was found to be twisted tightly upon itself, leaving a coil of bowel, in the intervening space, distended with gas. By following the folds of mesentery, the direction of the twist was ascertained and aided by the fact that movements in the right direction were accompanied by liberation of gas, the twist was gradually overcome, and the piece of bowel, which proved to be the single colon, was brought through the wound for examination. The mesentery could not be persuaded to pass through the incision as it was still much thickened and congested.

The bowel was then returned, the muscles brought together with one layer of interrupted sutures, and the skin treated similarly. The suture material was hempen thread, boiled and soaked in lysol solution. It has the advantage of being soft and strong, and does not tear the muscles easily. Catgut of sufficiently heavy gauge was not available at the time. One button tension suture was inserted in the skin in addition.

On the regaining of consciousness 2 lbs. of treacle in warm water were administered, and 2 grs. of strychnine injected hypodermically.

11-30 *a.m.*—2 *p.m.* Slight colic.

3 *p.m.* Peristaltic movements heard.

10 *p.m.* A small motion of normal consistency passed, very fœtid.

July 25th. Pain ceased completely. Three normal motions. No appetite.

July 27th. Cow looking better but appetite poor. Defæcation normal.

July 28th. Feeding, apparently well. Turned out for a few hours to graze.

August 6th. Slight pain, constipation. Removed skin sutures, when a little pus exuded from the muscle. Suspected either bowel embolism or local peritonitis. Administered two doses of 2 lbs. of treacle at eight-hour intervals.

August 7th and 8th. Diarrhœa.

August 10th. Feeding and normal. Fæces firmer. Progress uninterrupted, until September 30th, when the cow was sold as sound in a farm sale. The wound had healed but a depressed cicatrix remained. During the whole of the time she lost no flesh, and at the time of sale was half a hundredweight heavier than when first taken ill.

The history in this case gave no indication as to the cause of the condition.

H.M. STATIONERY OFFICE PUBLICATIONS.

The undermentioned have been published during the week. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28 Abingdon Street, S.W.1; Cardiff: 1 St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120 George Street

	Price Net.	*Post Free.*
HEALTH, MINISTRY OF:—	s. d.	s. d.
Public Health and Medical Subjects Reports:—		
17. Notes on the Pasteurisation of Milk (32-0195-17-00). (Reprint alteration in price)	0 4	0 4½
COMMAND PAPER:—		
2949. Royal Commission on Agriculture in India. Eleventh Interim Report, August, 1927		0 1½
INDIA OFFICE:—		
Agriculture in India, Royal Commission:—		
Vol. II., Part II. Evidence taken in the Bombay Presidency. (70—0192—02—00)	10 0	10 9
STATUTORY RULES AND ORDERS, 1927:—		
982. Animal, Diseases of Animals, The Markets, Sales and Lairs (Amendment) Order of 1927, dated October 6th, 1927	0 1	0 1½

National Veterinary Medical Association of Great Britain and Ireland.

Quarterly Meeting of Council.

The autumn meeting of the Council of the National Veterinary Medical Association of Great Britain and Ireland was held at the Ashburton Rooms, 28 Red Lion Square, London, W.C., on the afternoon of Wednesday, October 5th, 1927.

The President, Mr. J. W. McIntosh, occupied the chair, and there were also present Messrs. J. J. Aveston, J. C. Clarkson, J. C. Coleman, H. J. Dawes (Hon. Secretary), Major G. W. Dunkin, Professor F. T. G. Hobday, Messrs. H. P. Hogben, Howel V. Hughes, T. M. Inglis, Major H. Kirk, Mr. C. Masson, Professor J. McCunn, Captain S. J. Motton, Messrs. R. B. Nelder, J. McKinna, W. D. Rees, Capt. J. R. Rider, Mr. H. L. Roberts, Lieut.-Col. P. J. Simpson, Mr. C. Secker Smith, Professor A. R. Smythe, Messrs. E. Alfred West (Hon. Treasurer), J. Willett, Professor G. H. Wooldridge, Lieut.-Col. T. D. Young and Mr. F. Knight (General Secretary).

The President: I will ask the Secretary to read the minutes of the two meetings of Council held at Torquay. They have not been published, so I think it advisable that they should be read.

(These minutes were read and, being approved by the meeting, were signed as a correct record.)

The President: Reference has been made in those minutes to our friend Mr. McKinna and I wish on behalf of the "National," to welcome him back amongst us. (Applause.) We are very delighted to see him here to-day, and I hope, Mr. McKinna, that your health will continue and that you may meet for many years amongst us. (Loud applause.)

Mr. McKinna: I thank you, Mr. President, and also all of you, from the bottom of my heart—you have been so extremely kind. I am so glad to tell you that I am going on very satisfactorily. (Hear, hear.) Thank you very much. (Applause.)

Correspondence.

(1) The Secretary announced the receipt of communications expressing apology for non-attendance from Captain J. Anderson, Dr. W. H. Andrews, Mr. W. H. Brooke, Major Brennan De Vine, Professor S. H. Gaiger, Mr. W. Gardner, Mr. F. L. Gooch, Captain O. V. Gurlning, Messrs. R. Hughes, W. J. Ironside, J. S. Lloyd, N. H. MacAlister, James McAllan, G. P. Male, Major-General Sir John Moore and Captain A. W. Noel Pillers.

(2) From the Secretary of the National Clean Milk Society, as follows:—

3 Bedford Square,
London, W.C.1.
July 19th, 1927.

The Secretary,
National Veterinary Medical Association
of Great Britain and Ireland,
10 Gray's Inn Square, W.C.1.

Dear Sir,—It has been represented to the Council of my Society that the designations set forth in the Milk (Special Designations) Order, 1923, are such that the public is misled, particularly as the lowest grade of raw milk recognised (which is not tuberculin tested) is designated "Grade A." My Council is satisfied that widespread dissatisfaction exists in regard to this as the majority of consumers naturally assume that Grade A is the highest grade, but that concerted action is necessary in order to induce the Minister of Health to make any alteration.

It is proposed to ask the Minister of Health to receive a deputation consisting of representatives of the various Societies and Associations interested. I am to ask if the National Veterinary Medical Association of Great Britain and Ireland will advise me if they are prepared to co-operate with the National Clean Milk Society and other bodies to this end and if so whether:—

(1) Your Association will be prepared to nominate a representative on the proposed delegation to the Minister of Health.

(2) My Society may state, in the Press or when writing to Members of Parliament, etc., that we have your co-operation.

Further, my Council are strongly in favour of a Bill being introduced in Parliament which should give power to County Borough Councils, Borough Councils and Urban District Councils (areas having upwards of 50,000 inhabitants) to adopt, with the consent of the Minister of Health, any one or all of the following provisions in regard to milk sold within their area:—

(i) Compulsory classification in accordance with a system of classification prescribed by the Minister of Health.

(ii) Compulsory bottling, under suitable conditions, of all milk.

(iii) Compulsory pasteurisation of all milk that does not conform to a definite standard.

I am to ask if your Association is willing to associate itself with the National Clean Milk Society in endeavouring to promote such a Bill.

Please note that my Council's two proposals, *i.e.* (*a*) alteration in the Special Designations authorised by the Minister of Health, and (*b*) Limited Local Option dealing with Classification, Bottling and Pasteurisation, are being dealt with separately as it may be possible that some Associations or Societies may wish to further one proposal and not the other.

A letter similar to this is being addressed to all the Societies and Associations who supported the National Milk Conference, held on November 16th last, and it is hoped that they will co-operate.—Yours faithfully,
J. E. Holland, *Secretary*.

Professor Wooldridge: It was at my instance that this matter was deferred to this meeting and was not dealt with at the Council Meeting held at Torquay, because it is the custom to deal, at Congress Council Meetings, as far as possible, with only such matters as arise at the annual Congress, unless they are of particular urgency, and as I did not feel that this communication fell within that category, I exercised my discretion, as President, and suggested that it should remain over for consideration at this Council Meeting.

The President: It appears to me that the question involved in this letter is a very momentous one, and if it meets with your approval I would suggest that it be remitted to the Veterinary Inspectors and Public Health Committee to deal with, because it is a subject which requires a good deal of thought and probably a good deal of discussion.

Lieut.-Col. Young: Will it not then be too late?

The President: This letter was received on July 20th, and, of course, a considerable time has passed since then. I do not know whether the members have any other views to put forward with regard to it.

Professor Wooldridge: I think that if it is remitted to the committee it will be rather late to deal with it, and I feel that the Council is competent, if it so wishes, to appoint a representative. A change in the nomenclature

is highly desirable and I think the Council would be quite right in supporting any step which would render these grades of milk less ambiguous, but which would in no way hamper the good work being done by the milk producers in improving the general standard of milk. I propose that the matter be dealt with now.

Professor HOBDAY: I second that. I think it would be well for us to appoint a delegate to-day, because he would have a voice in the matter at the proposed meeting with the Minister of Health. By appointing our delegate we do not subscribe to everything there.

The PRESIDENT: It suggests here that we should give permission to the Society to state, in the Press or when writing to members of Parliament, etc., that they have the co-operation of this Association, and I think that implies, at any rate, that we co-operate with them in all these details.

Lieut.-Col YOUNG: I think that would be the object of appointing a delegate—to stop them putting forward something which would not be in the interests of the general public.

After further discussion, it was agreed to request the Society to accept two delegates. Professor Wooldridge was appointed as the first delegate, and, in the event of the Association's request being acceded to, the President as the second.

(3) From the Hon. Secretary of the Australian Veterinary Association:—

Australian Veterinary Association,
c/o Veterinary Research Station,
Glenfield, N.S.W.
21*st July*, 1927.

The Secretary,
National Veterinary Medical Association
of Great Britain and Ireland,
10 Gray's Inn Square, London, W.C.1., England.

Dear Sir,—I am directed by the President (Col. Max Henry, D S.O.), to inform you that our next general meeting will be held in Melbourne, Victoria, on February 14th, 15th and 16th, 1928, and to invite your Association to be represented officially.

The greater part of the meeting will be devoted to scientific papers and discussions, in addition to which there will be the usual business meeting.

I would point out that this Association is representative of the whole Australian Commonwealth and we therefore expect members to be present from all the Australian States.

Our Association would feel honoured if you could arrange for representation, and we feel sure that such would be of material benefit by affording opportunity for exchange of opinion, both purely professional, and as affecting the general welfare of Veterinary Science.

We assure your delegate a warm welcome and a pleasant time during his stay in Australia.—Yours faithfully, H. R. SEDDON, *Hon. Secretary*.

The PRESIDENT: I am sure you will all welcome this very kind invitation. (Applause). Do not all volunteer at once. (Laughter).

Professor HOBDAY: Could we not, when a reply is sent, state that Colonel Young, who is a member of our Council, will shortly be in Australia? He would be made welcome as a delegate from this Association, although he would not actually be in time for the meeting.

Professor WOOLDRIDGE: May I ask if we have any members resident in Australia who could be appointed as our delegates and represent us at the meeting, pending the arrival of Colonel Young?

The PRESIDENT: My own view is that, while I should, for my part, be very glad to fall in with Professor Wooldridge's suggestion in ordinary circumstances, if it is likely that Colonel Young is to be present it would be better for us to have direct representation at that Conference.

Colonel YOUNG: My Committee have accepted the offer which has been sent by the Commonwealth Government for me to go out. Unfortunately, I should not be leaving till February and therefore should not be present in time to attend the conference.

On the proposition of Colonel YOUNG, seconded by Mr. DAWES, it was agreed to send to Colonel Max Henry, President of the Australian Veterinary Association, the names of those members of the "National" resident in Australia and to ask him to select one or two to represent the Association.

(4) A letter from the Managing Director of Messrs. Adsigns, Ltd., 265 Strand, asking if there would be any objection to printing at the foot of a circular containing a description of their sign for Veterinary Surgeons, as advertised in the *Record*, the words "Approved by the Council of the National Veterinary Medical Association and advertised in the *Veterinary Record*."

The letter was sent up from the Editorial Committee with a request for the decision of Council in the matter.

Professor WOOLDRIDGE moved, Professor HOBDAY seconded, and it was agreed, that a reply be sent that the Council regret that it is unable to sanction the use of its name in any such circular or advertisement.

(5) From Mr. Arthur Gofton, conveying his thanks to the Council for his appointment as a co-opted member.

(6) From the Town Clerk of the Borough of Torquay as follows:—

Town Hall,
Torquay.
23*rd September*, 1927.

NATIONAL VETERINARY ASSOCIATION.
ANNUAL CONGRESS AT TORQUAY, 1927.

Dear Sir,—I am directed by His Worship the Mayor to acknowledge receipt of your letter of the 20th instant, and to say that it shall be read at the next meeting of the Council.

His Worship is glad to know that your Association had such a successful and enjoyable Congress in Torquay and is very much obliged to you for your kind remarks as to the hospitality which he provided.—Yours faithfully, HERBERT A. HIELD, *Town Clerk*.

F. Knight, Esq.,
General Secretary,
National Veterinary Medical Association,
10 Gray's Inn Square, W.C.1.

The letter was received with applause.

(7) From the Secretary of the Royal (Dick) Veterinary College, Edinburgh:—

Royal (Dick) Veterinary College,
Edinburgh.
28*th September*, 1927.

The General Secretary,
National Veterinary Medical Association,
10 Gray's Inn Square, London, W.C.1.

Dear Sir,—I have been instructed by the Board of Management of this College to approach your Association relative to the question of salaries paid to members of the profession who are teachers in veterinary schools.

It has long been felt that the salaries paid to the teachers in this College compare very unfavourably with those paid

to veterinary officers serving under the Ministry of Agriculture and Fisheries and other public bodies.

I shall be glad if this matter can be brought before the appropriate committee of your Association, so that they may consider whether representations can be made by your body to improve the status of veterinary teachers by placing them in a more favourable financial position.

I might add that it is proposed to enlist, if possible, the sympathy of the British Medical Association on this question.—Yours faithfully, A. C. DOULL, *Secretary*.

On the proposition of Professor WOOLDRIDGE, seconded by Mr. ROBERTS, it was agreed to refer the letter to the Appointments Committee for consideration and report.

(8) From Professor Dr. L. De Blieck, of Utrecht University, expressing gratitude for the honour bestowed upon him by his election at Torquay as an Honorary Member of the Association, and conveying an assurance of his intention to do everything possible to augment the prosperity of the N.V.M.A.

(9) From Lieut.-Col. J. W. Brittlebank, of Manchester, requesting the Secretary to convey to the Council his grateful acknowledgment for the kindness they had shown him in again appointing him Vice-President.

(10) From the Hon. Secretaries of the Dumfries and Galloway, Eastern Counties, and Lincolnshire and District Divisions of the Association, replying to the Association's enquiry respecting the control of cows reacting to the tuberculin test.

Further consideration of this matter was deferred pending the receipt of the complete returns.

ELECTION OF NEW MEMBERS.

The following gentlemen, having duly filled in nomination forms and paid their subscriptions, were, on the proposition of Mr. WEST, seconded by Mr. COLEMAN, elected to membership of the Association: Messrs. H. S. Dunn (Hove), C. P. Fisher (Khartoum), W. H. Glanville (Blackrock), F. T. Finney (Newcastle), A. C. Forbes (Bishop Auckland) and J. B. Walker (Slough).

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

The PRESIDENT now called upon Major G. W. Dunkin to present his report as delegate to the Thirteenth Annual Meeting of the National Association for the Prevention of Tuberculosis.

Major G. W. DUNKIN: I have pleasure in presenting to you my very brief report as your delegate to the Thirteenth Annual Meeting of the National Association for the Prevention of Tuberculosis, which was held in the Great Hall of the British Medical Association, on June 30th and July 1st.

The Minister of Health, Mr. Neville Chamberlain, opened the proceedings, and in doing so emphasised the decline in the mortality from tuberculosis by nearly two-thirds in half a century. It is noteworthy that the Minister expressed some difficulty in ascertaining the cause of this decline. Mr. Chamberlain referred to the improvement in housing conditions and in environmental and social conditions.

The subject of the Conference: "Present Lines of Attack on Tuberculosis, their Relative Value," was opened by Sir John Robertson, M.O.H., Birmingham. Sir John also referred to the reduction in the mortality rate due to tuberculosis during the last fifty years, but, like the Minister of Health, he did not attempt to suggest a cause. He did not think that the Public Health Acts of 1875 nor the present anti-tuberculosis campaign had influenced the rate of decline to any large extent. In rural districts, he stated, the tuberculosis mortality rate was much lower than the rate for England and Wales, notwithstanding the fact that the rural worker was better off than the townsman in two respects only—fresh air and light.

One member touched on the veterinary side—Mr. Kitt, of Guernsey. He said the cow ought not to be neglected. Some years ago, he said, bovine tuberculosis was introduced into Guernsey by cattle returning from a show in England. Furthermore, there was an increase in human tuberculosis. For the last three or four years bovine tuberculosis had been stamped out, there being only two doubtful reactors to tuberculin in 3,000 cattle tested annually, and the human mortality from the disease had sunk from 8.5 to 1.7.

There was a further session devoted to Housing, and yet another on Industrial Conditions, which was opened by Professor Collis.

I should like to add, continued Major Dunkin, that I trust that the "National" will support this Association with all its strength in future years. I was one of those unfortunate people who had very little knowledge of this Association and I had absolutely no information as to the good work it was doing. I feel that our profession is not sufficiently represented on it, or, as we ultimately might hope to be, on its Council. In any case, I do hope that we shall send a delegate every year and one who can talk with some authority on this subject; therefore, such a gentleman should be very carefully selected.

The PRESIDENT: I am sure it is your wish that I should convey to Major Dunkin our thanks for attending the Annual Meeting of the National Association for the Prevention of Tuberculosis on our behalf and for his very excellent report. (Applause.) We also have his suggestion as to annual and always authoritative representation, and I am sure the Council will give it due weight at the proper time. (Hear, hear.)

REPORTS OF COMMITTEES.

In the absence of the Chairmen of Committees, largely in consequence of the holding of special meetings of the R.C.V.S., the reports of Committees were read by the Secretary.

APPOINTMENTS COMMITTEE.

This Committee met this morning, with Mr. Gofton in the Chair.

The Secretary read a letter which had been addressed to the Colonial Office regarding the salaries paid to veterinary officers in the Malayan Service, together with the reply received thereto. This was to the effect that, after careful consideration of representations on this subject, which have also been received from the Royal College of Veterinary Surgeons, it has now been decided to institute in the autumn an enquiry into the conditions of service of veterinary officers not only in Malaya, but throughout the Colonies and Protectorates, and that the Association's observations with regard to the salaries of Malayan Officers will receive full consideration in relation to that enquiry. In the meantime, Mr. Secretary Amery feels that no useful purpose would be served by proceeding with the examination of the rates of pay in any one Dependency.

The Committee instructed the Secretary to keep in touch with the R.C.V.S., so that if, when the time arrives for the enquiry to be held, the Colonial Office decides to hear evidence given by representatives of the Royal College, then this body (the N.V.M.A.) might also ask to have an opportunity of simultaneously submitting evidence.

A letter was received from Mr. P. G. Short, M.R.C.V.S., of Ipoh, expressing his thanks for the action which was being taken by the N.V.M.A. on behalf of the veterinary officers in the Malayan Service.

The report was received and adopted without discussion.

Editorial Committee.

The Editorial Committee has met regularly throughout the last quarter of the Association's year, during which its regular duties have been augmented by the consideration of matters arising in consequence of the delegation to this Committee of the responsibility for the publication of the Congress Handbook.

The Committee is glad to report that the number of advertisements secured for the Congress Handbook yielded a larger financial return than that of last year, which was itself a considerable advance upon that of the preceding year. This gratifying result was accomplished despite the discontinuance of the employment of the services of a professional advertising agent.

Here it may be mentioned, also, that the change in the method of working has proved beneficial in connection with "Veterinary Record" advertisements. During the quarter the Committee has devoted a good deal of time to the duty of keeping the advertisement columns of the "Record" free from announcements the publication of which would not be desirable.

Concerning literary matter, the supply of material continues to be gratifying to the Committee, and advantage has been taken of the list of collaborators in maintaining the standard of the Clinical Section at a high level.

At the last meeting of the Committee consideration was given to the desirability of effecting an alteration in Mr. Brown's designation as Editorial Representative, which was considered by many members to be cumbersome. The Committee had two suggestions before them but were divided in opinion as to which would be the more appropriate, and decided, therefore, to place them before the Council, these suggested designations being: (1) Editorial Secretary; (2) Managing Editor.

Some discussion took place on the concluding paragraph of the report, concerning which it was moved by Professor Wooldridge, seconded by Professor Hobday, and agreed: "That no action be taken." The report was adopted.

Finance Committee.

The Finance Committee has held two meetings since the Council met in July.

It has been decided to subscribe the sum of £5 5s. towards the cost of the propaganda campaign on behalf of the Horse, which is being launched by the National Horse Association of Great Britain.

Careful consideration has been given to the letter from Professor Hobday, suggesting (1) that the Medallion of the Presidential Chain shall be made detachable so that it may be suspended round the President's neck by a ribbon when it is desired that it shall be worn in that way instead of with the gold chain, and (2) that the names on the links should be engraved deeper than they are at present. The Committee has decided to adopt the former suggestion and is making arrangements accordingly, but it does not consider that any action in regard to the other suggestion need be taken at the moment.

The report was adopted.

Organising Committee.

A meeting of this Committee was held at 10 Gray's Inn Square, W.C.1., this morning, with Dr. Bradley in the Chair.

A report was made of the items of information circulated to the Press by the Publicity Agent during the past quarter. The Committee expressed the opinion that the material issued from Headquarters should be of a high standard and should not contain references of a personal nature.

The Committee gave consideration to the feasibility of the adoption in this country of a panel system for the treatment of the sick animals of poor persons. After discussion, the Committee came to the conclusion that this was a matter in which the R.S.P.C.A. might be expected to be the primary movers, but it was agreed to forward to the R.S.P.C.A. as well as to the S.S.P.C.A., Edinburgh, and the Ulster S.P.C.A., Belfast, a copy of the resolution adopted by the Council at Torquay, in regard to the profession and the treatment of the animals of the poor.

In this connection it was agreed also to send to the R.S.P.C.A. a copy of a letter sent by the Association to the Editor of the *Bournemouth Daily Echo*.

The matter of the re-grouping of Divisions was again the subject of deliberation by the Committee, who decided to leave it in the hands of the President and the Branch Secretary to explore with the various Divisions in the Southern Branch the possibility of securing the effective functioning of the Branch.

The acceptance and adoption of the report having been moved and seconded, Mr. McKinna said: I should like to say how very satisfactory has been the degree of publicity given in the provincial newspapers this year to the proceedings at our Annual Congress. (Applause.)

The motion was then carried.

Parliamentary Committee.

A meeting of the Parliamentary Committee was held at 10 Gray's Inn Square, W.C.1, this morning, with the President in the Chair in the absence of Professor Buxton.

The Secretary read letters which had been addressed to the Ministry of Agriculture and the Ministry of Health, and which had also been circulated with a covering letter to the National Farmers' Union and the British Dairy Farmers' Association on the subject of the Control of the Distribution and Use of Tuberculin. He also reported that he was in possession of formal acknowledgments of the receipt of these communications.

The action of the Sub-Committee appointed to deal with this matter was approved.

Correspondence which had passed between the Office and the British Medical Association, the Association's Solicitor (Mr. Langley) and the Secretary of the Association of Veterinary Inspectors, Ministry of Agriculture, concerning the position under the Trade Disputes and Trade Unions Act, 1927, of Veterinary Inspectors who are Civil Servants, was placed before the Committee. Mr. Hughes, of the Veterinary Department of the Ministry of Agriculture attended the meeting, and the Committee, after hearing his views and in deference to the opinions expressed in a letter which had been received from the Association of Veterinary Inspectors, decided that no action should be taken in the matter at the present moment.

The report was adopted.

Veterinary Inspectors' and Public Health Committee.

A meeting of the Veterinary Inspectors' Committee was held this morning, when Mr. Gofton presided, owing to the unavoidable absence of the Chairman, Mr. G. P. Male.

Correspondence which had been received from the Secretary of the Lancashire Division was submitted, this having passed between a member of the Association and an Insurance Co., concerning the inadequacy of the fee offered for the examination of an animal for Insurance, which the member in question had refused to accept.

The Committee directed that the attention of the Insurance Co. concerned should be drawn to the Schedule of Veterinary Fees which was agreed upon at a meeting of

Representatives of the Live Stock Offices Association and of the late Veterinary Inspectors' Association, the hope to be expressed that the Company would abide by the decision therein contained. It was further agreed that, in the event of an unsatisfactory reply being received from the Company, the matter should be reported to the Live Stock Offices Association, after consultation with the Chairman of the Committee and the Hon. Secretary.

Mr. McKINNA: May I ask what was the fee offered?

The SECRETARY: The fee offered was six shillings and the agreed fee, according to the Schedule, was eight shillings.

The report was adopted without further discussion.

SPECIAL COMMITTEE APPOINTED TO MAKE NOMINATIONS FOR STANDING COMMITTEES.—A meeting of the Special Committee of Council appointed to make nominations for Standing Committees of Council was held at the offices of the Association this morning.

The President occupied the Chair, and there were also present, Dr. O. Charnock Bradley, Mr. H. J. Dawes (Hon. Secretary), Mr. A. Gofton, Sir John Moore and Mr. E. Alfred West (Hon. Treasurer), together with the Solicitor, Mr. C. O. Langley.

The Committee agreed to make the following nominations to the number of fifteen for each Committee, and to submit these to Council:—

APPOINTMENTS COMMITTEE.

Andrews, W. H.	Gaiger, S. H.	Rees, W. D.
Bradley, O. C.	Gofton, A.	Rider, J. R.
Buxton, J. B.	Hobday, F. T. G.	West, E. Alfred
Catmur, R.	Moore, J.	Whitehouse, A. W.
Craig, J. F.	Peele, H.	Wooldridge, G. H.

FINANCE COMMITTEE.

Aveston, J. J.	Locke, G. H.	Simpson, P. J.
Clarkson, J.	Macdonald, J. F.	West, E. Alfred
Dunkin, G. W.	Male, G. P.	Willett, J.
Glover, R. E.	Roberts, H. L.	Wooldridge, G. H.
Gooch, F. L.	Rainey, J. W.	Young, T. Dunlop

VETERINARY INSPECTORS' AND PUBLIC HEALTH COMMITTEE.

Coleman, J. C.	Male, G. P.	Rees, W. D.
De Vine, W. J. B.	Masson, C.	Roberts, H. L.
Gofton, A.	Peele, H.	Townson, W. K.
Gooch, F. L.	Powley, J. O.	Whitehouse, A. W.
Hogben, H. P.	Rabagliati, D. S.	Young, T. Dunlop

ORGANISING COMMITTEE.

Bradley, O. C.	Gofton, A.	Rainey, J. W.
Buxton, J. B.	Hobday, F. T. G.	Rees, W. D.
Catmur, R.	Kirk, H.	Rider, J. R.
Craig, J. F.	Masson, C.	West, E. Alfred
De Vine, W. J. B.	Moore, J.	Wooldridge, G. H.

PARLIAMENTARY COMMITTEE.

Bradley, O. C.	Inglis, T. M.	Rider, J. R.
Buxton, J. B.	Male, G. P.	Simpson, P. J.
Catmur, R.	Peele, H.	West, E. Alfred
Dunkin, G. W.	Rainey, J. W.	Whitehouse, A. W.
Gofton, A.	Rees, W. D.	Young, T. Dunlop

EDITORIAL COMMITTEE.

Cameron, T. W. M.	Male, G. P.	Smythe, A. R.
Dunkin, G. W.	Minett, F. C.	West, E. Alfred
Glover, R. E.	Moore, J.	Willett, J.
Kirk, H.	Rainey, J. W.	Wooldridge, G. H.
McCunn, J.	Simpson, P. J.	Young, T. Dunlop

The report was accepted and adopted—the Standing Committees for the year 1927-28 being elected accordingly—with the following amendments to the membership of the Veterinary Inspectors' and Public Health Committee: Captain S. J. Motton for Mr. W. D. Rees and Mr. J. McKinna for Lieut.-Col. T. D. Young.

The PRESIDENT pointed out that the omission of Mr. McKinna's name from the list of nominations was made, as Mr. McKinna would readily understand, solely out of consideration for his state of health.

Mr. McKinna, however, expressed a desire to serve on the Veterinary Inspectors' Committee, and it was immediately acceded to by the Council.

PROVISIONAL COMMITTEE: The following gentlemen were elected as the Provisional Committee in connection with the Annual Congress of 1928—a Committee of which all members of Council are members *ex.-officio*:—Blackburn, W. H.; Christopher, F.; Croudace, F. J. L.; Davidson, J.; Doughty, W. A.; Elphick, C.; Elphick, H. S.; Finney, F. T.; Forbes, A. C.; Hicks, H.; Hill, C. G.; Isherwood, J. P.; Jarvie, T. R.; Mitchell, T. M.; Parker, T.; Pratt, E. H.; Rider, J. W.; Snaith, P.; Starkey, D.; Stewart, W. Lyle; Summers, W.; Taylor, J. H.; Thompson, G.; Wilkinson, T.

CONGRESS PAPERS AND DISCUSSIONS.

The next business before the Council was to review the allocation of the number of words to the writers of papers for Congress, and of time to the openers and contributors to the discussions thereupon.

The PRESIDENT: With regard to the next item, gentlemen, I do not know what can be done here, because a definite time for the openers of discussions is laid down in the Articles of Association, and it will be necessary to alter the constitution of our Articles if we are to make any alteration in regard to that.

Professor WOOLDRIDGE: It is within the memory of the Council that the length of the papers was curtailed last year on account of the great expense involved the previous year by reason of the inordinate length of the papers. From the financial point of view that curtailment has worked out very well, but it has been felt that the writers of papers were unduly cramped. The limit was put at 3,000 words, but, knowing that I was interpreting the wishes of the Council correctly, I took the opportunity, when conveying to them the invitations to write the papers, to inform them that they could be allowed a little license. I think that might be allowed to remain as it is, provided they are given to understand that they must not extend the allowance unreasonably.

The PRESIDENT: I think the number of words to be allowed to writers of papers is not laid down in the Articles of Association.

Professor WOOLDRIDGE: It is laid down in a minute of Council. The question of the time allocated to the openers of discussions was not taken into account at the Council meeting at which the length of papers was discussed. The result was that at Torquay the openers had considerably more time than the writers of papers. I suggest we fix a time limit of fifteen minutes for the openers, and also that we rule that any written opening must be able to be read in that time. For subsequent speakers I would suggest the time allowed be five minutes or longer, at the discretion of the Chairman or of the meeting, if the speaker be one whom the meeting is specially desirous of hearing at greater length. I must say, however, that it is a striking commentary on the controversy concerning the limitation of words that none of the writers of papers discussed at the sessions over which I presided took the opportunity with which I presented them of making preliminary remarks before the discussions began.

The CHAIRMAN: I think it is not desirable that we should alter the Articles of Association and that the existing arrangement, as it has been explained to-day, will meet any difficulties which may arise in connection with the length of papers.

Professor WOOLDRIDGE: The disadvantage in that is that a man can write a paper, in opening, two or three times the length of that of the writer of the original paper and he can read it in fifteen minutes. I think there must be a definite instruction to the openers of discussions.

The CHAIRMAN: That will be taken into consideration by the Provisional Committee.

RESOLUTIONS FROM DIVISIONS.

From the Lancashire Division.

(i) "That in the opinion of this Council the time has come when the National V.M.A. should reconsider the scale of salaries for whole-time veterinary appointments."

(ii) "That in the opinion of this Council the time has arrived when the parent body (viz., National V.M.A.) should contribute a portion of the general expenses of the Divisions."

The Council referred the first resolution to the Appointments Committee and the second to the Finance Committee.

From the Yorkshire Division.

(i) "That we, the Yorkshire Division of the N.V.M.A., are in favour of any attempt to find a more humane method of preparation for slaughter by the Jewish method."

The SECRETARY: There is a letter from Mr. J. S. Lloyd, Secretary of the North Midland Division, on this subject. It is as follows: —

N.V.M.A. North Midland Division,
Town Hall, Sheffield.
July 30th, 1927.

The Secretary,
National Veterinary Medical Association,
10 Red Lion Square, London, W.C.1.

Dear Sir,—At a meeting of the above Association held yesterday, Mr. Sampson, of Sheffield, stated that a resolution had been sent up from the Yorkshire Association with regard to an improved method of casting large animals prior to slaughter by the Jewish method.

Several members spoke condemning the usual practice of killing for the Jews and it was carried unanimously that I send a letter from this Association supporting the resolution of the Yorkshire Society.—Yours faithfully, J. S. LLOYD, *Hon. Secretary.*

Mr. CLARKSON: As a representative of the Yorkshire Division, I should like to say that this has nothing to do with the actual slaughter; it is concerned simply with methods of preparation for slaughter, which is a very important point, of course.

Lieut.-Col. YOUNG: This instrument for casting the animal is about to be tested and until that is done I think it would not be wise for us to do anything more than refer the matter to the Veterinary Inspectors' and Public Health Committee.

Upon the motion of Professor WOOLDRIDGE, seconded by Colonel YOUNG, it was agreed that a reply be sent expressing the Council's sympathy with the resolution, and stating that it had been referred to the above-mentioned Committee.

(ii) "That in the interests of the profession, the veterinary student should, during the College vacations, take every opportunity for gaining acquaintance with the practical details of his professional work, after taking the Matriculation Examination; and that the Council of the Royal College of Veterinary Surgeons shall be asked to consider whether, after 1928 (or some such reasonable date) it be not advisable to institute some bye-law which, by a form of pupilage, will necessitate that a student has spent at least twelve months of his vacations in contact with actual practice before presenting himself for the Diploma."

The resolution having been read, Professor WOOLDRIDGE said: May I ask, Mr. President, if the title of the Finance Committee is properly entered in our agenda; is it not the Finance and General Purposes Committee?

The PRESIDENT: Yes, that is so.

Professor WOOLDRIDGE: Then I propose that this resolution be referred to the Finance and General Purposes Committee.

This was agreed.

ANY OTHER BUSINESS.

The PRESIDENT: Under the next, and last, heading on our agenda, I should like to put before you some suggestions in regard to the next Congress of the Association, which I have received from Captain Rider, the Hon. Secretary of the North of England Division, in whose area the Congress will be held. Captain Rider suggests that an endeavour might be made to secure the attendance at one or more functions of H.R.H. the Prince of Wales. (Applause.)

He also suggests that there should be held a Church Parade, to be attended, if possible, by the civic dignitaries, and, in order to permit of this Church Parade taking place, that the Congress should open on the Saturday. Captain Rider further requests me to bring before you the question of the most suitable date for the holding of the Congress.

I consider that these proposals show a very active mind on the part of the individuals in that district, and I, personally, welcome them. (Hear, hear.) I bring them forward to-day because I thought that we might have some expression of opinion from this Council in order to guide the Provisional Committee in their deliberations later on.

Professor WOOLDRIDGE: The experience gained at Torquay may help in this matter. A very considerable number of members arrived at Torquay on the Saturday prior to the meetings, and, rather than extend the Congress over the succeeding week-end, I think the opening of the week would be the better time for the Church Parade.

Then, in regard to any suggestions for the date of the Congress, it has been suggested by some that there are very good reasons that it should be held earlier than was the case last year. I may point out that the decision as to the date has heretofore been dependent upon local circumstances—for example, the date of the Dublin meeting was fixed so that it might coincide as nearly as possible with the Horse Show—the last week in July; at Aberdeen the meeting was fixed for September, also for local reasons, while the Cambridge meeting was held in August so that Caius College should be available for the use of delegates. So that, except for an expression of opinion, it ought to be left in the hands of the Provisional Committee. But, that being so, I would point out to you that what I think we must all agree have been the two most successful Congresses of recent times—Aberdeen and

(Continued at foot of first column next page.)

DIVISIONAL REPORTS

North of England Division.

(*Continued from page 944.*)

Reply to Discussion on Johne's Disease.

In reply to the Hon. Secretary, Major Dunkin said that the thickness of the skin bore no relation to the extent of the lesions, and again called attention to the charts provided by the two cows, Classical, and Honey Carnation. The case of the bullock which gave a negative reaction had so far given no evidence of Johne's disease. It was, however, too early to give a final opinion on this point.

It was useless to pay too much attention to skin measurements in doubtful cases. The line between reactors and non-reactors depended on the character of the swelling—the degree of heat, tenderness and diffusion and, as in many other things, it was a matter of opinion as to the interpretation of a reaction. For comparison, if one took a large number of tuberculin tests in which half were reactors and half non-reactors there was found to be an overlapping of curves, *i.e.*, some reactors might have skin measurements of 14 m.m., and some non-reactors had measurements of 14 m.m. Under those conditions it was essential to concentrate on the character of the swelling and neglect the measurements.

Mr. Rider had referred to the Cambridge cow. This animal had reacted to tepsin but had shown no evidence of Johne's disease. The cow had not been outside the stall for several months, although another animal affected with the disease occupied a box on the opposite side of the yard. Direct smears from the ileo-cæcal valve and gland showed no acid-fast organisms, but by adopting the process described in the paper it was possible to grow organisms from the cæcal gland. This culture was still growing.

Mr. Elphick was, perhaps, too optimistic, the test was only in its experimental stages, and it remained to be proved. Curative measures had not yet been attempted. The best means of prevention appeared to be segregation, fattening, and killing of reactors.

Mr. Hill's question regarding the frequency of a dual infection with Johne's disease and tuberculosis was answered to some extent by the results of the tests on Mr. Spencer's herd. The extent of a joint infection might be 26 per cent. or even greater.

Mr. Doughty thought that about eighteen months was the most frequent age for infection to occur. The speaker had not personally seen a case in animals under one year old. Variations in the reaction could perhaps be best accounted for by invoking the aid of "individual sensitivity."

The infection of sheep raised an important point; personally he thought that Johne's disease was not very prevalent in this animal. Goats had been known to be infected.

It was most interesting to know that Mr. Stewart had observed the disease in a seven months' old beast, and he hoped Mr. Stewart might be able to give further details later. The speaker had used unconcentrated tepsin for a subcutaneous test, but in the three animals tested in this manner there had been no result. The American preparation Johnin-Mulford had not yet been used.

Referring to the variations between the strains of Johne's bacilli, Major Dunkin said that there were differences in growth and that a mixture of the three strains gave a better growth than either of the individuals.

Mr. Mitchell was fortunate not to have many cases of Johne's disease. The statement as to prevalence was based on information supplied by practitioners in Northumberland, Sussex, Devon, Cornwall, and East Kent. Major Dunkin had not personally observed the change of colour mentioned by Mr. Pickering, but Mr. Motton, of Penzance, had told him of a similar experience.

In reply to Mr. Hicks, the speaker said that combined ophthalmic and intradermal tests had been tried with results similar to those obtained with the corresponding tuberculin tests. He had found avian tuberculin to be of no value in the diagnosis of Johne's disease. Twenty per cent. antiformin for twenty minutes would not destroy the other acid-fast organisms referred to by Mr. Hicks, although the rate and character of growth would be altered. An exposure of half an hour would delay growth but not destroy it, and he had found a concentration of 15—16 per cent. to be more satisfactory. The bacillus of Johne's disease was recognised by the character of its growth as well as by the fact that it was shorter and stouter than any of the tubercle bacilli.

A cordial vote of thanks was accorded to Major Dunkin on the proposal of Mr. Taylor, who remarked that the paper contained much food for thought, and he hoped that at some future date Major Dunkin would pay another visit to the North of England, and disclose further valuable new work.

(*Continued from previous page.*)

Torquay—were both held in September, and I would ask the Council to bear that well in mind before recommending a change of date to earlier in the year: the earlier the better—in the month of September.

Captain Rider: May I say that it has already occurred to the members from the North of England that, for the reasons stated by Professor Wooldridge, the first week of September would be the best time to hold the Congress; also that the Church Parade should be held (if at all) on the first week-end and not on the second.

The President: Well, gentlemen, I think unless there is anything further to add to that, that with these suggestions we may leave the rest to the Provisional Committee, with the guidance of the Council from time to time as we go along. (Applause.)

Before the conclusion of the meeting, the Secretary announced, amid much applause, that he had been informed by Mr. Nelder, Hon. Secretary of the Provisional Committee for the Torquay Congress, that the Congress account showed a balance at the bank of £23 10s. 8d. This, said the Secretary, was an unprecedented situation.

The meeting terminated with a vote of thanks to the President for his conduct in the Chair.

Major Dunkin made a suitable reponse, after which the meeting adjourned to Mr. Doughty's premises for the inspection of three animals which had reacted to the test. Much interest was displayed and keen discussion ensued amongst the members regarding the interpretation of the test.

Any other Business.

Major Dunkin very kindly exhibited skiagrams illustrating a split pastern which occurred in a two-year-old thoroughbred.

At the conclusion of the meeting members were cordially entertained to tea by Mr. and Mrs. Doughty, who were accorded a warm vote of thanks for their hospitality, on the proposal of Mr. STEWART.

J. R. RIDER,
Hon. Secretary.

Eastern Counties Division.*

OPERATIONS AT NORWICH.

The Autumn meeting of the above Division was held on Thursday, September 29th, at Mr. H. P. Standley's Veterinary Infirmary, Norwich, Capt. P. R. Turner presiding. There were also present Major T. G. Heatley, Messrs. H. Buckingham, H. Low, H. P. Standley, H. P. Standley, jun., M. Bray, H. F. Downe, W. Turtill, W. F. Loveless, J. F. Smith, W. L. Downie, W. F. Howes, W. J. Browning, W. H. Wortley, J. M. Currie, J. F. Thurston, E. A. Burgon, and W. Shipley (Hon. Secretary), with Messrs. H. J. Loveless, Alastair Steel, and T. F. Tunney (Visitors).

Letters of apology for absence were received from Messrs. G. T. Matthews, E. Brayley Reynolds, F. L. Gooch, V. Boyle, H. Godbold, R. L. Cornell, J. Hammond, Philip Turner, P. Welch, V. Pride Jones, F. Morton Wallis, R. C. Tayler, J. K. Gooch, H. Caulton Reeks, H. E. Wilkinson, W. Waters, D. Blyth, H. Mitton, T. J.Bosworth, C. C. Nesling, H. L. Roberts, T. E. Barcham, T. Love, Colonel W. A. Wood, and Major F. G. Heatley.

The meeting consisted of Demonstrations of Operations, and commenced at 11-30 a.m.

Case No. 1. Castration of a large boar pig, using a general anæsthetic, by Mr. W. H. Wortley, who exhibited a very practical and simple chloroform muzzle for the purpose. He advised a primary dose of chloroform of about 5 drams. Under anæsthesia the testicles were removed by torsion.

Case No. 2. Hysterectomy on a bitch, performed by Mr. H. J. Loveless. The subject being under the influence of morphia and chloroform and æther mixt., Mr. Loveless performed the median line operation in an exceedingly neat and instructive manner, which was much appreciated by the members.

Case No. 3. Mr. W. Turtill demonstrated the spaying of young sow pigs by a very practical method on a collapsible operating table conveniently arranged for packing and easy erection.

Case No. 4. Mr. Turtill then demonstrated the spaying of a bitch in a similar manner under a general anæsthetic.

Case No. 5. Major T. G. Heatley gave a very instructive demonstration of the treatment of sterility in a cow by Ziel Nielsen's method, consisting of the rupture of the yellow bodies in the ovaries and the retraction of the cervix, injecting a one per cent. sol. of iodine into the body of the uterus.

Case No. 6. A very interesting case of malignant tumour in the wall of the vagina of a pony mare. This was excised by Mr. H. P. Standley, who expressed the opinion that it was probably carcinoma or sarcoma and would undoubtedly recur.

Case No. 7. Mr. W. Shipley performed median neurectomy, the subject being a half-bred Suffolk gelding.

Case No. 8. Mr. Standley removed a broken upper fifth molar in a cart horse.

Case No. 9. Mr. Wortley concluded the demonstrations with a practical and efficient method of caponing fowls.

The business part of the meeting was held at Mr. Standley's house, with the President in the Chair.

The minutes of the last meeting, as appearing in the *Veterinary Record*, were taken as read.

On the proposal of Mr. Turner and seconded by Mr. Shipley, Mr. H. J. Loveless, of Ipswich, was nominated as a member.

The Secretary read a letter from the N.V.M.A. asking for the opinion of the meeting on the control of cows which have reacted to the tuberculin test. It was resolved that the Secretary should reply that " In the opinion of this meeting the time has not yet arrived for the control of cows which have reacted to the tuberculin test and such control would not be practicable until an Order enforcing the compulsory testing of cows be passed."

The Secretary read a letter from the Directors of the Royal Veterinary College thanking the Society for its donation of twenty pounds to the Rebuilding Fund.

It was resolved to hold the next meeting at Ipswich in February. A hearty vote of thanks to Mr. Standley for the use of his infirmary, staff and meeting room concluded the meeting. The members were then entertained to tea by Mrs. Standley.

W. SHIPLEY,
Hon. Secretary.

* Received on October 5th, 1927.

Light Horse Breeding.

PROGRESS DURING THE PAST SEASON.

" The light horse show season practically ends in the last days of September," wrote the correspondent to *The Times* last month, "and the time has therefore arrived when the position of horse breeding may be considered on broad lines. It is more especially with the hunters that we have to deal on this occasion, for under present conditions the hunter occupies the most important position among our light horse breeds. In addition to the place he holds in the life of the countryside we have to rely on him in time of war. It is curious that the war, which denuded the country of its horses to a tremendous extent, was also the foundation of an improvement in our hunters. Owing to the war a much better class of horses was shown for the King's Premiums, and the effect of that will be felt for many a day.

" Things move slowly in horse breeding, especially in light horse breeding. The reason, no doubt, is that the strain on the light horse is heavier in proportion than on his heavier and slower relative. But for the last three or four years those who have carefully watched the classes at the various important shows have been aware

of a slow but certain progress from year to year, which at last has developed in a manner which may make the present time a conspicuous period in the history of light horse breeding.

"Good classes of yearlings and two-year-olds began to be prominent at the leading shows a few years ago, and the way in which they changed places at the various shows was a proof that a level type had gradually been established. As time went on this level character became evident in the older classes, and then gradually began to show itself in the riding classes. But, most important of all, it has been during the recent show season conspicuous in the brood-mare type. The short-legged mare with shoulders in the right place and with power behind the saddle, and at the same time possessing quality has been more and more in evidence all through the season, and, instead of one or two outstanding mares, a state of things to which we became accustomed not so many years ago, there has scarcely been a show of importance at which the merits of the various brood mares have not been keenly discussed.

"This is evidence that we have again an opportunity, but unfortunately we are not making the best of it. One would think that it must be obvious that, in order to reap the full benefit of the shows, a fairly accurate record of the pedigrees of those horses which make their mark in the show-ring should be kept, and that they should be easily identified. By such means we are able to recognise what progress we are making. The record of the show-yard is as important for the well being of breeding as the record of the Stud-book. The majority of those in authority, however, fail to recognise this important fact. If they did we should not see so many show catalogues which are practically a disgrace to all concerned. There are two reasons for these catalogues. One is the carelessness of those making the entry. Like so many other things, it is postponed until the last moment, and then done in a hurry, with the usual result. But there is another reason. Many men—and it is to be regretted that the number seems to show no signs of diminishing—do not describe their horses, in order that they may show anything, and there are many cases of horses being shown which have been borrowed for the purpose. This is a risky proceeding, and may easily have serious consequences for those who indulge in it.

"There is another matter which has been brought very forcibly to the notice of observers during the show season. That there are too many shows is an undoubted fact. All practical men are agreed on that point, and it is plain that one good show is worth more than three moderate ones. But it is very difficult to decide which shows are to go and which it would be better to amalgamate. There have been from time to time a few meetings at which this matter has been the subject of discussion, but nothing has been suggested which looks like helping us out of the difficulty. Cannot some practical men settle a definite plan of campaign before next season's shows begin? Then perhaps in a couple of years we might find our horse shows filling a better place than they do at present in our national economy."

R.C.V.S. Obituary.

Richmond, Frederick James, 9 Connaught Street, Oldham, Lancs. Graduated, 14th April, 1880. Died, 21st October, 1927.

Personal.

Will.—Matheson, Mr. James Allan, of North High Street, Musselburgh, Midlothian, veterinary surgeon (personal estate in Great Britain), £2,718.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Oct. 31st—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, 4-30 p.m.

Nov. 3rd—Central Division Annual Dinner.

Scottish Branch N.V.M.A.

At the Annual Meeting of the Scottish Branch N.V.M.A. (of which a report will appear in a later issue of the *Record*) held at Gleneagles, on Saturday, October 15th, Mr. Walter Gardner, of Maybole, was elected President and Mr. W. C. Miller, of Edinburgh, was re-appointed Hon. Secretary for the ensuing year.

Veterinary Inspection in Inverness.

A Conference of representatives of District Committees and Burghs in Inverness-shire, held at Inverness on October 19th, discussed the proposal to appoint a whole-time veterinary inspector for the county under the Milk and Dairies Act. The Town-Clerk, Inverness, said that in the burgh of Inverness at present they had a very effective inspection of dairies at a reasonable cost. The burgh felt that if the appointment of a whole-time official were agreed upon, the allocation of the cost should be made on a basis of the cow population, and not on the valuation. There were not as many cows in Inverness burgh as in the Inverness district of the county, yet on the basis of valuation the burgh would have to pay more than the District Committee.

Mr. John Fraser, representative of the First (Inverness) District Committee, said it would be more equitable to have the allocation on a basis of valuation. The cows were in the first district, but the consumers of milk were in the burgh. The Act was for the benefit of the milk consumers. Mr. Shaw, Slackbuie, said they should carry on with their part-time officials. The travelling expenses of a whole-time official in a scattered county like Inverness-shire would be too great. Lochiel said that the Lochaber District had also decided to carry on with their part-time veterinary officer.

Major MacKinnon, Skye, said that his District Committee did not want to go in for a whole-time official, but if the other authorities decided to go in for the scheme, they were prepared to join in if the cost did not exceed £50.

Captain J. A. R. Macdonald, of Balranald, said they had no dairies in North Uist, where the cattle were practically all Highland cattle.

Ex-Provost Simpson, Kingussie, said that if they went on with part-time officials, the Act would be a dead-letter so far as the burgh of Kingussie was concerned.

Mr. H. A. Skelton, Foyers, declared that personally he thought it would be a mistake not to appoint a whole-time official. Taking a larger view he thought that they would, in the long run, save on the public health side anything extra that they would have to pay for a whole-time official.

It was agreed after further discussion to abandon the proposal to appoint a whole-time official, and to leave authorities to make their own arrangements with part-time officials in the most efficient manner possible.

. . . . . .

In accordance with the authority given them by the West Riding County Council, the Agricultural Committee have appointed four assistant veterinary inspectors, the salary in each case being £400 per annum, with annual increments of £25 per annum, to a maximum of £600.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

The Importance of the Sire in the Tuberculosis Problem.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—We who were unable to attend the Congress at Torquay are much indebted to you for the full publication of the lecture given by Sir John M'Fadyean on "The Prevention of Tuberculosis in Animals." It is refreshing to see this important subject approached in a practical, broad-minded manner and the view of the owner kept well to the fore. Too many of our recent writers on this subject look on the owner of a tuberculous cow as a culprit who deserves severe punishment. There are those who advocate branding of all reactors; it would be more practical to order the owner to shoot and bury the animal at his own expense. The healthy cow showing a bit of udder does not pay to feed at the present day price of cow beef, so where a branded fat cow could be disposed of I do not know.

Few, if any, writers on this subject ever mention the sire as a means of spreading tuberculosis. I believe Sir John when he tells us that the disease is not hereditary, but somehow experience at times tends to contradict this. In any case, one would think a calf with a healthy sire is more likely to resist the disease than one by a bull that was tuberculous. It is a common saying that the bull is half the herd, and the ram is half the flock; hence, with this in mind, the good farmer will use nothing but the best of sires. Many will tell you that it improves the health as well as the size and quality of the stock.

A client, or rather his bailiff, bought a very good, fashionably-bred, Shorthorn bull for £140 at a Shorthorn sale. The bailiff was very pleased about his bargain, but, when asked about his tuberculin chart, said he had not got one. I advised testing the bull before he served a cow, as all the pedigree cows (some sixteen of them) were tested cows. There were about thirty cross-bred cows untested on the farm as well. He refused to allow me, I suppose fearing the worst. The following year, when testing the first crop of bull calves, seven in number, for the March sales, four reacted and three passed. The owner, always having been used to about 100 per cent. passes with his young bulls, was very indignant. I told him that the bull had been bought without the test. He ordered him never to be used again, but by that time the mischief was done as the pedigree cows were all in-calf to him a second time. The second crop of bull calves, six in number, showed three reactors and three correct. The bailiff took care that I never tested any of the heifer calves by that bull. Although that was seven years ago, I have never had a young bull react on the farm since and from four to eight have been tested every year.

Some years ago, in the West Riding of Yorkshire, a scheme was on foot to supply the cottagers and small farmers with a good bull. I am not sure of the conditions attached, but one owner in each village or district applied and got a bull, tuberculin tested, and by paying insurance and guaranteeing to charge a certain fee, either 3/6 or 5/– a service, up to a certain number of cows, all his neighbours were allowed to use him. At the end of two years he became his own property. There was very soon found to be a great improvement in the quality of the stock and, I believe, also in the health of the stock in those villages.

I am of the opinion that the time has come when all bulls used for stud purposes should hold a clean tuberculin certificate. Such a law would impose little or no hardship on anyone and stockowners all over the country would welcome it. The stallion has to undergo a searching examination before he can travel on the road.

For many years I have made it a rule to castrate every bull that reacts, and rarely do I meet with any opposition. In fact, owners look upon it as the one and only thing to do, no matter how good the bull or how long the pedigree.

It is appalling to watch, at our pedigree stock sales, dozens of fine young pedigree bulls all with clean tuberculin charts going straight to the slaughterhouse to be killed. Many of them would make more money through a fat stock ring. Within a few miles of the sale farmers are using mongrel-bred animals every day. They will tell you, if they buy one of those pedigree bulls, that they are so pushed and pampered for sale that immediately they get them home and they have to rough it amongst their store cattle they fall away in condition.

The dairy farmer who only produces milk will use any sort of bull so long as he gets his cows in calf, knowing very well that all his calves will be sold at birth. The rearer buys those calves because they are out of good, wide milking cows and never enquires about the bull. It is only the farmer who breeds and rears his own calves that is particular about the sire.

If it was made compulsory that all bulls, say fifteen months old, must have passed the tuberculin test, a very great improvement would soon be noticed in quality as well as in the health of our cattle, and probably it would be easier and cheaper to set up a clean herd than it is to-day.—Yours faithfully, WM. A. CAMPBELL.

Boroughbridge, Yorks.
October 14th, 1927.

Meat Inspection.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In the October 22nd issue of the *Veterinary Record* I take pleasure in noticing that what I know from practical experience is the only satisfactory method of meat inspection, *viz.*, *ante* and *post-mortem* inspection, was stressed by your contributor, Captain Ross Grant.

I should have more pleasure if assured that those veterinary surgeons who are acting as meat and sanitary inspectors to local authorities would, in every possible instance, carry out the recommendation to the letter. It would, in my opinion, prevent a lot of diseased cattle slaughtered for human consumption getting on to the market, and so enlighten the public and health authorities on the paramount necessity of appointing veterinary surgeons for these important duties.—G. ELLIS, M.R.C.V.S.

Glossop.

The Editor acknowledges the receipt of the following:—

Communications from Messrs. N. S. Barron, H. Gray, Major-General Sir Frederick Smith, Mr. J. W. Hall Masheter and Captain S. Villar.

Report of a meeting of the Veterinary Medical Association of Ireland, from Professor J. J. O'Connor, Hon. Secretary.

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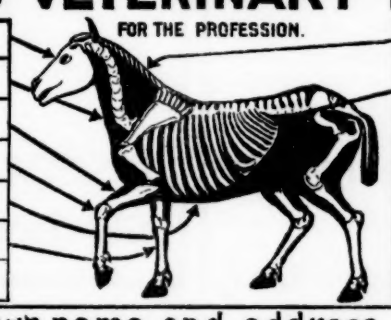

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